

**THE ROLE OF EXPRESSED EMOTION AND SOCIAL SUPPORT IN
PSYCHOLOGICAL ADJUSTMENT TO MYOCARDIAL INFARCTION**

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DECLARATION

'This thesis has been composed by myself and the work contained herein is my own'.

Signed:.

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ABSTRACT

This longitudinal study wished to assess the power of expressed emotion components and social support in predicting levels of a variety of intra-psychic concepts associated with recovery from myocardial infarction (M.I.). Such concepts include anxiety, depression, self-esteem, self-efficacy, attitudes towards disability, locus of control and attributional style. Previous research suggested that biological predictors of heart disease development might account for only 50% of the variance in M.I. occurrence, severity, and subsequent psychological recovery. Evidence from psycho-social research suggests that only certain aspects of social support and expressed emotion are associated with adjustment. Much of this research is cross sectional in nature and relies on a few, narrowly-defined outcome variables. The present study wished to address these methodological short-comings. Data was obtained from thirty patient-spouse couples soon after M.I. occurrence (Time 1), and from twenty-seven of these couples after approximately ten weeks (Time 2). Multiple regression analyses allowed the predictive power of expressed emotion and social support with regard to psychological adjustment to be assessed at both points in time. The relevance of such psycho-social concepts in predicting adjustment was compared to physical and demographic variables. Results are discussed in the light of previous research, the concept of adjustment, the age of the study sample, and limitations of the study design.

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To Dad.

1.0: Introduction

Literature on the psychological and social factors pertinent in myocardial infarction (M.I.) and coronary artery disease (C.A.D.) can be split into three broad areas:

1. Psychosocial factors important in the development of heart disease and myocardial infarction.
2. Psychosocial factors important during the acute stages of myocardial infarction.
3. Research on those factors important during the recovery phase after the individual has left hospital.

These areas are not mutually exclusive. Bundy (1994) notes that psychological factors, such as anxiety, depression, and Type A behaviour pattern (Friedman & Rosenman 1959) may be important at each of the three stages. Some factors may only be important at particular stages of disease progression. As the current study looks at recovery from heart attack, a summary will be given of the literature pertaining to the development of disease and prediction of the acute event, while a more extensive analysis of research on immediate reactions and psychosocial factors relevant in longer-term recovery will be made. An argument will be presented that a social perspective on those factors important in all stages of disease should be taken, as patients exist within a dynamic, interactive social environment. This social environment may be influenced by the actions of persons with heart disease, and may in turn influence their well-being.

1.1: M.I. Incidence and Prevalence

Approximately 180,000 individuals suffer an acute myocardial infarction (M.I.) in the U.K. every year (Lewin 1995). If the population of the U.K. is taken as being 55 million, this represents 1 person in approximately every 306. It is the biggest killer of males in Britain (Bundy 1994). Of every million men in the U.K., heart disease and myocardial infarction kill some 4300 each year (Ogden 1996). In the United States, it is believed that up to 1.5 million people suffer an M.I. each year, with a third of these individuals dying before reaching hospital (Sarafino 1990). Ogden (1996) estimated that in 1986, £390 million was spent by the National Health Service in the U.K. on heart disease alone.

1.2: The Nature of C.A.D. and M.I.

An M.I. usually arises as a result of coronary artery disease (C.A.D.), where atheromatous (fatty) deposits build up on the lining of coronary artery walls, restricting the flow of blood (and therefore oxygen) to the heart musculature. This restriction gives rise to chest pain, known as angina pectoris. Artery spasm may be another reason for such angina (Bundy 1994). When the deposited plaque builds up further on the inside of the vessel walls, a total blockage can occur, cutting off the blood supply to that part of the heart entirely, causing an acute M.I. An infarct can also be caused by the splitting away of such plaques from other areas along the vessel, which then re-deposit themselves in areas where the artery may be smaller in diameter, causing blockage and infarct. Such M.I.s cause death of the myocardium, or heart muscle, immediately surrounding the area of infarct. Lewin (1995) notes that in some 42% of cases, an acute M.I. is the first indication of coronary artery disease. Repeated M.I.s may give rise to complete heart failure due to gross myocardium death, or cardiac arrest where the death of heart tissue gives rise to erratic electrical activity throughout the rest of the organ. Cardiac arrest results in the sudden death of the patient where immediate medical intervention is not available.

1.3: Risk Factors in the Development of C.A.D. and M.I.

Ogden (1996) considers risk factors for the development of heart disease within two distinct categories. Factors may be either non-modifiable (such as socio-economic status, gender and family factors), or modifiable (those that may be considered behaviours to be changed, such as smoking, stressful work and over-eating). She states that psychology has a role in altering those modifiable behaviours which place a person at risk from developing heart disease.

Much of the evidence concerning risks of developing coronary artery disease has centred around biological factors, and a medical model has largely predominated in this area. Evidence from epidemiology overwhelmingly suggests that factors such as smoking, high blood pressure, obesity, and family history all contribute to the development of heart disease (Shaper et al. 1981).

The undoubted contribution of these factors to the development of coronary artery disease appears to be (quite literally) only half the story. The factors outlined in such a biomedical model account for only 50% of M.I. cases, and in themselves do not help to account for the severity of illness or its progression once established (Lewin 1995). Clearly other factors of a non-biological nature must play a part in the development of the disease process. Psychosocial factors may play as important a part in predicting disease onset, M.I., subsequent survival and successful rehabilitation. Indeed, a clear division between biological and psychosocial factors is not tenable, as factors such as smoking, lack of exercise and overeating may be influenced by intra-psychic and social aspects of an individual's life.

Not all biopsychosocial factors important in determining C.A.D. and outcome in one culture will be as relevant in another. Marmot (1983) notes that the Japanese have one of the lowest incidences of C.A.D. in the world. Lewin (1995) states that despite this, the Japanese have increased their intake of high risk foodstuffs such as saturated fat by

50% over 10 years while still decreasing their overall mortality from C.A.D. by nearly a quarter over the same period. Marmot (1983) suggests that the high levels of social support within Japanese society help to off-set the effects of other high risk factors. This suggests that psychosocial factors such as stress and the possible buffering effects of support networks may have an important role to play in preventing the development of C.A.D.

1.4: Psychological Risk Factors

One of the first psychological factors to be implicated was personality, more specifically the Type A behaviour pattern (Friedman & Rosenman 1959). It had been found that those displaying this type of personality, characterised by a sense of time urgency, ambition, and hostility and anger, had a significantly greater chance of developing heart disease (Rosenman et al. 1975; Review Panel on Coronary-Prone Behaviour and C.H.D. 1981). Literally hundreds of papers have been published on this one factor alone. Yet the role of such a personality type in heart disease remains equivocal. Many studies have produced contradictory findings. Friedman et al. (1986) showed an association between alterations of Type A personality and subsequent reductions in heart disease in those having suffered from an M.I. already, and cite much evidence for an association between Type A personality and C.A.D. Other large studies have reported no association at all (e.g. MRFIT 1982). Dembroski et al. (1985) found no relationship between global Type A and the level of disease in a blind study of 131 patients who had undergone exploratory angiography. This study involved patients with existing disease, and therefore cannot state (as the authors contentiously do) that the results represent evidence against Type A being *predictive* of heart disease. The study did find an association between self-reported angina, number of M.I.'s, and two behaviours: potential for hostility and "anger-in" (characterised by the suppression of angry behaviours). Type A has been shown not to be specific to heart disease (Lewin 1995), being implicated in a variety of other illnesses such as asthma and stomach ulcers (Rime et al. 1989). There is less research on how people come to develop such a personality type in the first place, and how social factors may influence

its development. Marmot (1983) also notes that Type A personality cannot predict the incidence of C.A.D. throughout the population distribution, citing evidence from prospective studies which show that Type A is often lowest in some samples of men who are most at risk from developing C.A.D. The mechanisms by which the behaviour leads to coronary heart disease and M.I. are still unclear. Lewin (1995) notes that C.A.D. may arise from an excessive neuroendocrine response to high arousal. Despite limitations to the theory, some consistent findings have been shown for certain aspects of the Type A personality predicting disease. These appear to be the negative emotions such as anger and hostility (Booth-Kewley & Friedman 1987). There is also some evidence for an association between high levels of anger and hostility, and self-reported angina (Smith et al. 1984; Dembroski et al. 1985). Booth-Kewley & Friedman (1987) summarise findings on Type A behaviour, meta-analysing research. They conclude that some of the traditional aspects of Type A, such as impatience, being "hard-driving" and competitive in relation to one's work, are not particularly associated with C.A.D. development. They also note that prospective studies looking at the predictive power of Type A show much smaller associations between personality and C.A.D. than cross-sectional research. Finally, they conclude that depression also appears to be related to heart disease. This suggests that individuals with a cluster of negative emotions may be more prone to C.A.D. than those with a competitive attitude towards life.

One criticism of the Type A construct in the context of the current study is the individualistic approach studies have taken. This is surprising given the nature of Type A itself. These traits may have a profound impact upon the individual's social environment, most especially on significant others. It is to be wondered what effect the response of others might have on what has been proposed to be a stable personality trait. Marmot (1983) states that it is still of some debate whether Type A behaviour is an example of stable personality, or a reaction to outside influences in the social milieu.

More recently some attention has been paid to the effects of such social factors upon "coronary-prone" personality. The Type 2 construct (Grossarth-Maticek et al. 1988) is typified by the focusing of one's anger and frustration regarding personal

circumstances on a single, emotionally important person or object. Persons showing the Type 2 pattern continue to be dependent upon those around them even when those significant others have rejected them, and are unable to break away from these people, resulting in a perpetuating cycle of anger and hostility. A measure of such behaviour was designed by Grossarth-Maticek & Eysenck (1990), allowing self report of a variety of behaviours displayed during interpersonal, stressful situations. In a more recent study involving 128 male coronary patients, Espnes (1995) found no difference in Type 2 scores between these patients and a smaller control group matched for age. However, this study does not provide good evidence against this construct being predictive of disease, as all subjects in the experimental group had existing illness and the investigator was not blind to either control or experimental groups. The author notes himself that the study cannot conclude that those with Type 2 behaviour are more or less prone to coronary heart disease.

Another psychological risk factor may be hyper-reactivity. This refers to the tendency to over-react physiologically to stress or psychologically demanding situations. Lewin (1995) states that such reactivity represents a biological predisposition to stress, and that this gives rise to heart disease through the development of hypertension. Krantz & Raisen (1988) state that reactivity may be measured via blood pressure, heart rate and endocrine changes, monitored when the person is placed under stress. These measures give some indication as to how the person deals physiologically with demanding situations. The authors cite a complex interaction between such a reaction, the effects of neuroendocrines produced, and the development of atheroma and subsequent heart disease. They also link reactivity to Type A behaviour, proposing that it is also accompanied by pathogenic physiological response. They also provide evidence against a direct link between reactivity and heart disease based on case-control studies alone, noting that the disease process itself may alter the response to stress, and that an individual's awareness of their condition may effect the way they in turn deal with demanding situations. A study by Keys et al. (1971) cited by Krantz & Raisen (op. cit.) demonstrated that reactivity in the form of blood pressure changes was a significant predictor of heart disease over a 23 year follow-up period. Despite this being one of the few studies linking reactivity to heart disease in a predictive way, the concept may

provide us with one useful biopsychosocial hypothesis for the development of C.A.D. It may combine the role of interpersonal, environmental, and psychological factors in the form of the person's own perception and appraisal of the stressful situation (Lazarus & Folkman 1984), and the physiological response to stress which may be a biological over-reaction producing subsequent heart disease.

Life events may play some part in the development of C.A.D. and M.I. This area is controversial, perhaps due to a lack of quality research. It is unclear whether life events, as with personality and reactivity, can be clearly categorised as purely psychological in nature. Many life events are social by their very nature, but the individual's psychological response to them may determine the link with C.A.D. development. Depression seems to be implicated in the development of heart disease, and this may be one route through which life events such as bereavement may be influential. Indeed, Paykel & Cooper (1992) review studies which link life event occurrence with the onset of clinical depression. Of the seventeen studies examining depression onset in comparison with general population controls, sixteen of the samples showed an excess of life events. Lewin (1995), citing the review of this area by Byrne & Byrne (1990), concludes that results have so far been contradictory, and that any links found are likely to be complex, involving associations with stress and anxiety.

1.5: Social and Interpersonal Factors in C.A.D. and M.I.

The social and interpersonal factors which may contribute to the development of heart disease and M.I. have been less well documented in comparison with medical and intrapsychic factors. Much of this work has centred around socio-economic factors and how those living under certain social circumstances may be more prone to developing heart disease. Lewin (1995) notes that while heart disease was once a disorder of the middle and upper classes, its incidence is now spread across all strata of society. Evidence relating certain aspects of social class with the development of heart disease exists. Woodward et al. (1992) show that those who own their own home are less

likely to develop heart disease, while Brenner (1979) found that an unemployed sample developed heart disease faster than those in employment over several years. However, it appears that the role of socio-economic status is like that of the Type A personality: multi-faceted, and also having a role in the aetiology of other illnesses. Those of a lower socio-economic status are more likely to be affected by a wide range of factors which may have a bearing on the development of heart disease. These might include environmental stress (Krantz & Raisen 1988), more unstable social support, chronic stress, reduced mobility (Davey Smith et al. 1990), and possibly an increased number of life events (Byrne and Byrne 1990). Krantz & Raisen (1988) note that even though those from low socio-economic backgrounds have greater rates of those factors which contribute to C.A.D. (such as smoking and high blood pressure), these factors do not explain all the variance in C.A.D. within such sectors of society.

Some work has been done looking at how the nature of certain job environments may contribute to the development of heart disease. Factors such as demand, autonomy, control and satisfaction have all been implicated (Karasek et al. 1981; Karasek et al. 1982; Tyroler et al. 1987). Karasek et al. (1982) found that those in jobs typified by high demand and low control (examples given include waiters and telephone operators) are more prone to developing heart disease due to working under conditions of chronically high stress. This was the case even when other high risk factors were controlled for. Other evidence suggests that women who are employed are not, in general, at more risk from developing heart disease than housewives (Haynes et al. 1983). The same research found, however, that women in jobs with low control and who had children, were *more* likely to develop heart disease than housewives. With working women in general, risk of heart disease appeared to be correlated with the number of children they had, which was not the case for housewives no matter how many children they had. From this evidence it appears that the effect of the work environment cannot be separated from home and interpersonal factors. As this research states, there exists gender differences in what jobs mean to people. Krantz & Raisen (1988) note that while men may see their traditional role as provider and husband as a way of protecting themselves against the stress inherent in low control-high demand jobs, this may not be the case for women who have the

additional stress of being the primary care-takers of children. This might be relevant in considering how men and women in various job and home situations prior to heart attack react psychologically to the acute event.

Surprisingly little research has been undertaken on the link between interpersonal factors within the home environment, the marital relationship and the development of heart disease. This is noteworthy given the enormous research interest in the 'coronary-prone' personality and lifestyle issues such as smoking and exercise which form the core of the medical model of heart disease aetiology. One notable exception has been the Framingham Heart Study (Haynes et al. 1983; Eaker et al. 1983). This 10-year, prospective study looked at the role of spouse behaviour in the development of heart disease in 269 married males, who did not have C.A.D. at the start of the study. Using a comprehensive psychosocial questionnaire (measuring personality, reaction to anger, educational level, etc.), it was found that standard risk factors for the development of heart disease in these men (such as Type A behaviour, blood pressure, cholesterol levels and smoking) were affected by the status, role, and behaviour of their spouse. Even when controlling for risk factors and the male's social status, those married for longer than thirteen years were over two-and-a-half times more likely to develop heart disease over the period. Those married to white collar working wives were over three times more likely to develop heart disease than those married to housewives. Eaker et al. (1983), using the same data, found that the risk from Type A behaviour could be modified if the circumstances of the wife was taken into consideration, but only if such Type A men were employed in blue-collar jobs. While blue-collar men with Type A behaviour were generally more likely to develop heart disease than those designated as Type B, they were at three times the risk if married to women working outside the home.

The authors cite evidence that suggests Type A men tend to respond physiologically more strongly to certain situations which they perceive as a threat or a challenge to them. This appears similar to the hypotheses put forward in the reactivity literature. Eaker et al. (1983) suggest that the reason for blue-collar, Type A men developing more heart disease when married to working women is that they see this work as a

threat or psychological challenge to their own role within the home. Although the authors themselves state that the findings cannot lead one to conclude that spouse behaviour is associated with heart disease directly, the results appear to have profound implications for the study of interpersonal factors in the development of heart disease.

Several methodological points should be made about the Framingham Heart Study. Firstly, Eaker et al. (1983) did not state how participants' disease-free status at the start of the study was assessed. Secondly, the sample appeared to have been biased by the selection of those husbands who were in their employment years, despite data having been obtained from those older than 65 years. While the authors state that the sample *appears* representative of the general population, they provide no demographic or statistical evidence for this conclusion. Finally, Type A & B individuals were differentially categorised depending on whether they fell into the top or bottom 50% of scores respectively. This may have given rise to participants with similar scores being placed in different categories.

1.6: Summary & Conclusions

In the development of heart disease, a complex interaction of biological, intrapsychic and social factors is involved. It may be a fallacy to see physical factors in isolation, and as being the sole contributors to the development of heart disease. While high blood pressure, smoking, and high cholesterol levels may lead to the development of disease, they may each be the end, physical result of lifestyles which are influenced by intrapsychic and social factors. The consideration of a biomechanical model alone to explain the occurrence of disease may at best be a "red herring", and at worse a gross simplification. It is too simple to consider intrapsychic factors such as Type A personality in isolation from social factors, as the research has shown. How a person responds to his or her environment will be directly influenced by that environment and those in it.

2.0: Physical and Psychological Reactions to Acute M.I.

Adjustment to M.I. may be seen as occurring in two stages; the reaction and adjustment to the acute event, and recovery over a longer period from physical and psychological consequences. The first stage may usefully be seen as occurring during the individual's hospitalisation (a few days), whereas the second stage may begin around the time of the persons return home.

Given that nearly half of all acute events occur in people who were not previously aware of having heart disease (Lewin 1995), it is not surprising to find strong emotional reaction during and immediately following an M.I. This is especially the case when one considers the nature of the event and the subsequent intensive and often intrusive medical attention received in the Coronary Care Unit (C.C.U.).

2.1: The Experience of an Acute M.I.

The Health Education Board for Scotland (1991) outlines the main subjective features of an M.I. The individual may feel cold, clammy or sick, and appear ashen-faced and have blue-tinged lips and nailbeds. The M.I. itself produces a "vice-like" pain in the centre of the chest, which may extend down the arms and into the jaw area. At this time the person's heart beat may become irregular. Lewin (1995) states that the person may lapse in and out of consciousness. Very often clot-dissolving and blood-thinning medication is given early on in treatment to lessen the risk of reinfarction (Sarafino 1990). Depending on the nature and severity of the M.I., this risk may necessitate surgery such as balloon angioplasty (where the blocked coronary artery is re-opened via a plastic "balloon" inserted using a catheterisation procedure), or invasive bypass surgery (the replacement of diseased vessels with new ones from another area of the body).

2.2: Initial Reactions

Erdman (1990) notes that when regaining consciousness in the C.C.U., the patient is often unaware of how close they have come to dying. They may come to realise that they are still in a life-endangering situation. At this stage the main psychological reaction in a substantial number of patients is anxiety (Dellipiani et. al. 1976; Sarafino 1990; Bundy 1994; Lewin 1995). Erdman (1990) notes that the constant activity of medical staff, and the possibility of seeing other patients die may add to the individual's distress. Medical interventions may not be fully understood by the traumatised patient, creating a subjective loss of control, heightening anxiety still further. Some anxiety may be seen as adaptive given the nature of the event, and there is some evidence that the anxiety levels seen in M.I. patients are no greater than other patients coming into hospital for other reasons (Vetter et al. 1977). Lewin (1995) states that a recognisable pattern of reaction can be seen after this initial period of high anxiety. The patient may, after his or her condition has stabilised, feel mildly euphoric with the realisation that they are over the most life-threatening stage of their illness. This feeling may then subside when the patient contemplates discharge from hospital and the impact on lifestyle which the illness may have. Dellipiani et al. (1976) recorded a definite pattern of anxiety in two groups of M.I. patients. While anxiety was initially high on admission, it declined to normal levels when patients were transferred to ordinary wards, only to rise once again near discharge. Levels of anxiety throughout the study period were not related to the severity of the M.I.

While anxiety may be adaptive in alerting the individual to the seriousness of the situation, there is some evidence that very high levels of anxiety in response to the acute event are related to poorer subsequent outcome and recovery, as measured by such indices as return to work. Dellipiani et al. (1976) found this to be the case even when severity of the infarct was taken into account. Erdman (1990) suggests that given the shock and unexpected nature of the M.I., some patients develop beliefs and attitudes about disablement which remove them from their job permanently and

prevent them from being an integral part of their family and society in general. While in-depth psychological intervention is rare within the setting of the C.C.U., informal discussions to allay the patients fears at this time may be beneficial (Erdman 1990). The concern over losing one's job may be especially pertinent for younger M.I. patients in full-time employment and with families to support.

In many cases of acute M.I. the patient will suffer from depression as well as anxiety. Bundy (1994) estimates that some 30% of patients will experience clinical levels of anxiety and depression during the initial hospitalisation phase. In a study of 100 male M.I. patients, Lloyd & Cawley (1982) found 19 of these patients displaying psychiatric morbidity, with depression and anxiety predominating over other symptoms such as phobias, depersonalisation and irritability. The cognitive factors described above (e.g. contemplation of discharge) may well contribute to such distress. Lloyd & Cawley (1982) control for the presence of psychological symptoms which predate the M.I., although Lewin (1995) warns against making diagnoses of this kind after the acute event. Emotional distress may again arise through a perception of not being in control while in the C.C.U., as responsibility for one's immediate health is temporarily taken by hospital staff. Christman et. al. (1988) looked at emotional distress in some 70 post- M.I. patients, and found that subjective feelings of uncertainty explained most of the variance in levels of distress. Seligman (1975) found that a perceived lack of control over ones circumstances may give rise to depression. Feelings of anxiety and depression may themselves in turn give rise to a sense of external control. It may be through this lack of control that patients who are more severely distressed have poorer outcome regarding work when they return home (Dellipiani et al. 1976).

2.3: Emotional Distress, Cardiac Arrhythmias and Death

Considerable evidence exists for the role of emotional distress in cardiac events, including the phenomenon of arrhythmia and sudden cardiac death. Bundy (1994) notes that excessive levels of anxiety may give rise to abnormal electrical activity in the heart, which may be potentially catastrophic in the post-M.I. patient. Brackett &

Powell (1988), using data from the Recurrent Coronary Prevention Trial (Friedman et al. 1986), showed an independent effect of Type A behaviour on sudden death in over 1,000 post-M.I. patients, suggesting a strong link between high levels of stress and death immediately following M.I. Ruberman et al. (1984), in a sample of 2320 male M.I. patients, found that both social isolation and life stress were independent predictors of death at three years. As with the reactivity literature, Bundy (1994) suggests that such emotional stress may precipitate arrhythmic activity by producing changes in hormone levels via the pituitary-adrenal pathways.

2.4: Neuropsychological Consequences of M.I.

Any reduction in the function of the heart will impair blood delivery (i.e. oxygen supply) to all areas of the body, including the brain. Cardiac arrest will result in complete and global brain ischemia, and this will have implications for neuropsychological functioning, especially if the arrest takes place outwith the hospital setting.

Grubb et al. (1996) compared 35 patients who had experienced cardiac arrest outside hospital with a control group of acute M.I. patients. Both groups were matched for age, levels of anxiety and depression, premorbid intelligence and levels of social deprivation. They were tested using standardised measures of memory, including the Rivermead Behavioural Memory Test (Wilson et al. 1989), and the Digit Span subtest of the Wechsler Memory Scale (Wechsler 1987). Those experiencing cardiac arrest were significantly more impaired on most aspects of episodic long term memory assessed by the Rivermead Behavioural Memory Test (Wilson et al. 1989). Of the 35 patients who had arrested, 13 (38%) were considered to have a memory impairment likely to interfere with functioning. Memory impairment was significantly related to the duration of the arrest. What was largely overlooked by the study was that 37% of M.I. patients, whose hearts had not stopped during the acute episode, also showed signs of mild memory impairment. These findings may indicate that neuropsychological functioning needs to be considered as the individual prepares to leave hospital. It may

be useful to consider what effect such memory impairment has upon family functioning (Clare & Wilson 1997). Such deficits suggest that involvement of family and relatives concerning the alleviation of memory problems is vital if the patient is to adapt successfully to their home environment and adhere to any rehabilitation program. Unfortunately, the study by Grubb et al. (1996) did not use a normal control sample. This might have shown how “mild” the impairments shown by many M.I. patients were in terms of normal functioning.

With hypertension considered to be one of the major risk factors in the development of heart disease, it is useful to consider what neuropsychological side effects anti-hypertensive medications may have. Powell et al. (1993) compared three anti-hypertensive drugs randomly allocated to 55 patients who completed the course. While they found no difference in tests of learning and memory between the groups, the study did not employ a control group, and we are left wondering how the experimental groups compared neuropsychologically with those of similar age on no medication. Despite this, the authors state categorically that their findings provide little evidence for the adverse neuropsychological effects of such medication. This study also used its own tests, but no data on their validation was provided.

2.5: Coping Mechanisms

If the experience of an M.I. and the stay on the C.C.U. is distressing for many patients, what are the mechanisms with which other people cope better with the acute event? Approximately 75% of all those experiencing an M.I. will make a full physical and psychological recovery, and return to work as a result (Stern et al. 1976; Mayou 1984). There is evidence that many patients deal with the acute trauma through the use of denial. This may take the form of repudiating the diagnosis given by the doctors (Lewin 1995). Using denial as a short term coping device may help the patient overcome the initial shock of experiencing a life-threatening illness. Esteve et al. (1992) note that the use of denial in the first few days after an M.I. was associated with less anxiety and depression in a sample of nearly 100 male patients. This was also

the case one month post-M.I. Kaufman et al. (1985) note that in patients characterised by the Type A personality (Friedman & Rosenman 1959), a heart attack may be perceived as a threat to one's self esteem and locus of control. Therefore denial may be one mechanism whereby some patients may hold on to their personal integrity during the passive, acute phase of illness.

Evidence for the beneficial effects of denial is conflictual. Erdman (1990) believes that denial in the first stages of the acute event in the C.C.U. should be seen as a normal mechanism of adjustment. Esteve et al. (1992) found that the use of denial immediately after the M.I. had no effect upon outcome. Lewin (1995) notes that many studies have not controlled for other variables which may have just as significant a bearing on outcome, including social factors such as family reactions and extra-familial support.

The beneficial effects of denial may only be seen in some individuals. Such a coping mechanism later on in the recovery process may prove detrimental and sometimes dangerous for certain patients. Gullage (1979) describes the "counterphobic denier", who ignores medical advice regarding planned physical activity increases, diet and medication. It is suggested that such people often have irrational perceptions of the immediate reality, and as a result may require psychological input.

Agarwal et al. (1995), in a study of 70 M.I. patients immediately after infarct and at one month, looked at the concept of "positive life orientation", characterised as an ability to focus on positive aspects of the acute event and make positive social comparisons with others. This was associated with greater perceived control, higher expectancy of good recovery, and improved mood. This factor may give rise to adaptive coping strategies, which in turn enhance treatment compliance and create changes in behaviours detrimental to health. Through partial correlations it was found that positive life orientation was associated with better psychological recovery, whereas perceived control over the outcome of one's illness was associated with good physical recovery. It may be that such a life orientation in the first place predisposes the individual to develop a more internal locus of control, which in turn improves

mood and creates a climate in which coping strategies are used to aid psychological and physical recovery.

Lazarus & Folkman (1984), in explaining their cognitive model of coping with stress, suggest that persons will engage in problem-focused coping (dealing directly with the problem or stress that confronts the individual), and/or emotion-focused coping (dealing with the emotions associated with the stressor) in order to deal with stressful situations. Terry (1992), in a prospective study of 36 M.I. patients at discharge and at three months, found no beneficial effects of using problem-focused coping methods to deal with M.I. Christman et al. (1988) found that the use of emotion-focused coping by M.I. patients was associated with higher levels of emotional distress. Agarwal et al. (1995) suggest that those with a positive orientation towards life at the time of their M.I. may show greater use of problem-focused coping strategies in order to facilitate recovery, but provide no evidence for this in their study.

The role of causal attributions is discussed by Bar-On et al. (1994). The reasons given by 87 patients for the cause of their heart attack accounted for 15% of the variation in subsequent life functioning, including work, physical and social activity. In a follow-up study, Bar-On et al. (1994) found that initial causal attributions accounted for 26% of functional capacity. Those who attributed their illness to such "causes" as fate, luck and pressure of life, were found to have a lower functional capacity at follow up than those who could identify their own coping resources. These findings are explained by the authors with the use of a "self-fulfilling prophecy" hypothesis. Those with such external causal explanations for their illness come to do less to change their lifestyles, which in turn serves to reinforce negative causal attributions.

None of the above studies took social factors into consideration. Little mention is made of how those around the patient (including medical staff, family and friends) may affect reaction to the acute event, and how it is subsequently dealt with. Studies looking at the "psychosocial" effects of M.I. focus on the individual, while apparently ignoring the potentially vital role of others surrounding the patient (e.g. Stern et al. 1976; Lloyd & Cawley 1982). Little is made about how significant others (or their

absence) may come to influence levels of anxiety, depression and low self-esteem in acute illness (Reiss et al. 1986; Ruberman et al. 1984).

Proctor et al. (1996) looked at how a variety of hospital-based variables may influence the M.I. patient's outcome immediately on being discharged. They found close relationships between such factors as nursing care (e.g. perceived skill and competence, concern and caring), hospital environment, and patient outcome (e.g. knowledge, clinical functional and psychological status). Nursing care was the only variable to predict patient outcome on discharge. This study provides some evidence for the important role of others in determining short-term outcome following M.I.

2.6: Family Reactions to M.I.

Given the high intensity nature of the attention the M.I. patient receives on entering hospital, it is perhaps easy to forget the effects the acute event may have on the patient's family. Family members are often more affected by the acute event than the patient themselves (Mayou et al. 1978; Lewin 1995). An M.I. is a stressful and highly anxiety-provoking event for many families. Even when wives are given support and clear information regarding their husband's M.I., they can still experience emotional distress (Thomson & Cordle 1988). The reaction on the part of family members may have effects upon the recovering individual, especially when the patient is discharged (Doerr & Jones 1979). Taylor et al. (1985) showed that wives' perceptions of their recovering husbands' physical capabilities were often different to the perceived capabilities of the husbands themselves. Those wives who took part in the same treadmill exercise routine as their husbands, rated their husband's perceived self-efficacy significantly more highly than those wives who had only witnessed their husbands efforts on the treadmill or who had not taken part at all. It may be hypothesised that this increase in perceived self-efficacy would come to affect the subsequent interaction between couples.

Both husbands and wives' perceived self-efficacy before exercise testing subsequently predicted the husband's level of physical activity afterwards. As the authors state;

“Psychologic recovery from heart attack is a social rather than a strictly individual matter.” (Taylor et al. 1985, page 637).

Clearly self-efficacy appears important even soon after the acute event, and that important others' perceptions of the patient may in turn influence such self-efficacy.

2.7: Summary & Conclusions

During the acute phase of illness, a significant proportion of M.I. patients will experience feelings of anxiety and depression. These emotional reactions will be influenced by the nature of the C.C.U., the physical pain of M.I., a subjective feeling of loss of control, and the use of coping strategies such as denial. High levels of distress may determine outcome. M.I. may also give rise to subtle neuropsychological changes such as memory impairment. Such deficits may have an effect upon family functioning and adherence to rehabilitation. Family members may also experience high levels of anxiety at a time when the patient may be unaware of his or her surroundings. Little information is available which may highlight how emotional reactions affect family dynamics. It remains surprising that social factors are not apparently seen as being important in the acute phase of the illness, given that coping (of whatever type) appears to commence at the onset of the acute event. What effect might the initial stress experienced by spouse and other family members have on the recovering patient? How might the family come to influence the behaviour, cognitions and emotions of the patient?

3.0: Psychosocial Outcome Following M.I.

For the majority of M.I. patients, the emotional distress experienced during the hospitalisation period of their illness soon remits on return home, with most expected to make a full recovery and return to work over the course of the proceeding weeks and months (Lloyd & Cawley 1982). While this may be so for around 75% of patients, a minority may continue to experience high levels of anxiety and depression, becoming increasingly dependent upon their families (Stern et al. 1976; Bundy 1994). In the space of one day, the patient and his or her family must move from an environment where they are dependent upon medical staff, to relying on themselves to make a full recovery with all that that entails (such as any rehabilitation program, return to work, dealing with physical symptoms etc.). While this transition may provide the individual with an increased sense of control over their immediate environment, it also places full responsibility upon the shoulders of someone who is still physically weak. It also places a burden on the rest of the family who may still be trying to come to terms with the illness (Thomson & Cordle 1988). In a review of the literature on long-term psychiatric morbidity, Lewin (1995) concludes that anxiety and depression may occur at clinical levels in up to 30% of patients even after one year, with such rates being independent of M.I. severity.

Stern et al. (1977) found a 70% depression rate in a sample who had been depressed immediately after their M.I. While Bundy (1994) considers depression to be the most pertinent feature in the home recovery phase of the illness, Lewin (1995) notes that a focus on simple psychiatric diagnoses as anxiety or depression masks the day-to-day problems that many patients experience on their return home, such as job loss, sexual problems, physical deconditioning, and preoccupation with physical symptoms. Smith et al. (1984) showed a significant relationship between neuroticism and avoidance of physical activities in 50 participants with angina pectoris. This avoidance often leads to further physical de-conditioning after a period where the patient has already been sedentary for a prolonged period. This de-conditioning may give rise to hypervigilance

as more physical symptoms are produced on exertion, leading to invalidism and increased dependency upon others for simple, everyday tasks.

This vicious cycle of pain and disability is also often seen in chronic pain conditions. Increased pain on exertion due to muscle stiffness leads to a reduction in activity levels, thus maintaining the individual in the chronic pain state (Pearce & Mays 1994). Pain and illness behaviour exhibited by such patients may then be reinforced by family members (Fordyce 1976).

Lewin (1995) notes that of all the behavioural manifestations of anxiety after hospitalisation for M.I., avoidance of activity is often the most common. This avoidance of activity has physical consequences, and may prevent the individual from obtaining the extra-familial social support which may be vital at a time prior to return to work. Byrne (1982) studied the relationship between illness behaviours 10-14 days after M.I. in 120 participants. These patients self reported on a number of perceptions, including somatic concern, illness recognition and sick role acceptance. Psychosocial outcome variables included affective state (mostly depression), impact of the M.I. on social activities, and patient perceptions of physical abilities. Associations were found between affective state, perceived disruption to social life and interpersonal relations. Those patients reporting high levels of anxiety interfering with relationships soon after M.I. continued to feel anxious at follow up. This may have been compounded by avoidance of social engagement.

Sarafino (1990), in an overview of mostly U.S. literature on longer term adjustment to M.I., suggests that anxiety normally declines in the year following the M.I. He states that the emotions experienced in the recovery period are akin to those felt during any grief reaction. The recovering individual may experience losses to such things as their self esteem and independence. Little evidence for these assertions is provided. While this may be a useful way of conceptualising the initial reactions and consequences of an M.I., it perhaps plays less of a role in explaining how a person may come to adapt and eventually return to pre-morbid levels of functioning. A loss model (e.g. Worden 1982) would be incapable of explaining the effects of all the biological factors inherent in

short- and long-term adjustment to M.I. which may in turn have psychosocial consequences. These might include the effects of medication, and the effects of inconsequential, vague pains, which Sarafino (1990) himself states can often be a major obstacle in preventing people from returning to work after their illness. Sarafino (1990) does make the useful point that those most likely to have a successful outcome in terms of return to work are younger, have a better physical prognosis, and are in higher social classes. In a study by Langosch et al. (1983) with a sample of 70 male participants, younger people had less physical disease progression over a 3.8 year period than older participants.

Erdman (1990) points out that while a return home from the hospital is viewed as positive by most M.I. patients, this feeling is often countered by the realisation that they have faced possible death. This may give rise to a variety of reactions such as a fear of having a further M.I. Wiklund et al. (1985) describe a homecoming depression which may descend upon the patient at this time as a result of what they have been through. While many of the emotional reactions to a heart attack can be seen as anxiety based, some individuals may also display anger and aggression as a result of the frustration of not being able to do those everyday activities which were taken for granted before the M.I. This may especially be the case for those who displayed Type A behaviour prior to the M.I. (Gullage 1979). Given the concern regarding return to work, financial matters and personal health, Erdman (1990) notes that increased emotional irritability may be seen in many. Such irritability will very likely have an impact upon that person's immediate family. If concerns regarding physical exertion lead to avoidance of activity, increased dependence upon the family may further compound strained relationships. Erdman (1990) also suggests that depressive reactions may arise in many as a result of the "inward-directing" of anxiety-related cognitions regarding vulnerability.

Stern et. al. (1977), in a study of some 68 post-M.I. patients, found that those who were depressed one year after their infarct had not returned to work, previous sexual functioning, and had had more hospital admissions. Female M.I. subjects in the sample had more difficulties in adjusting after their illness. Of the 13 women studied, half died

during the follow-up phase, while most of those who survived had been readmitted to hospital with complications. After accounting for infarct severity as one possible cause on the basis of some men surviving with equally severe M.I.'s, the authors conclude that unusually high Type A patterns may be to blame, suggesting that the M.I. may have upset competitive routines. This appeared especially the case where women were in work and married. It appeared as though the illness affected their standing in the family, especially when their husbands became overprotective and prevented them from doing tasks around the home for fear of further medical complications. This study emphasised interpersonal factors in recovery, and provides evidence for some husbands being prone to overprotectiveness as well as wives, and for overprotectiveness undermining patient confidence and recovery.

Mitchell (1979) suggests that work represents a source of self-esteem for the recovering patient. Not only may the patient see work as a symbol of successful coping and recovery, but for those who are the sole "bread-winner" in the family, work may re-establish their role within the family context. Evidence is cited for return to work being associated with lower depression and more positive life orientation. Factors delaying return to work are given as age, poor pre-morbid work history, negative emotional response to the M.I. and patient attributions and sense of well-being post M.I.

While three-quarters of a sample of 63 participants with M.I. were able to return to work and previous sexual functioning in a study by Stern et al. (1976), most of those who had been anxious or depressed immediately after their M.I. continued to be so at follow-up at six weeks and three months. At follow-up, those participants from social classes IV and V made up a disproportionate sample of the group. The study identified two major types of response. Firstly, a group of eight patients were found to be depressed at six weeks post M.I. A second group of 16 patients had been more likely to return to work 12 weeks after their M.I. This group also displayed no depression at any point during follow up, and was characterised by individuals who may have denied the seriousness of their illness. These findings suggest that the positive outcome through denial while in the C.C.U. found by some (Erdman 1990; Esteve et al. 1992)

may also be seen further down the road of recovery. Additionally, the experience of high levels of distress while in the C.C.U. did not predict subsequent maladjustment. The experience of the C.C.U., while distressing, may not create long term adjustment problems. Other factors, such as coping style, social class, and home factors may be more important.

Mayou et al. (1978) interviewed 100 patients with M.I. at various points up to one year after discharge from hospital. Psychological distress of a moderate or marked nature was identified in nearly one-third of the sample. Such distress was characterised by mixed anxiety and depression, fatigue and irritability. Sixty percent of patients had returned to work by twelve weeks. Only eight of the original sample had not returned to work after one year. Of those who had returned to work, two-thirds had reduced their physical activity while there, and one-third of returnees stated that they enjoyed their work less than before their M.I. Half of the sample reported a lowered frequency of sexual intercourse with their partners. Social contacts did not seem to alter for most as a result of their illness. Although many ventured out of their homes less, this was compensated for by home visits from family and friends.

Lewin (1995) reminds us that dependent variables such as return to work should not be used exclusively to gauge an individual's recovery. Return to work may be influenced by whether employers make it possible for M.I. patients to return to their former employment, age (which may influence the decision to retire after the M.I.), and financial circumstances. The employment situation of the spouse will have a crucial bearing on this latter factor. Lewin (1995) also points out that difficulties in sexual functioning after M.I. (reported by as many as 58% of patients) may not be simply due to difficulties in adjusting emotionally or to fear of over-exertion. A variety of drugs used for hypertension reduction have been shown to affect sexual functioning in M.I. patients (Reichgott 1979).

The above evidence suggests that a definition of adjustment to M.I. needs to embrace a wider variety of important process and outcome variables than simple activity-based outcome factors. It is clear that a number of intrapsychic, biological, and social factors

need to be encompassed within the rubric of “recovery” or “adjustment”. We have seen that anxiety, depression, locus of control, self-esteem, self-efficacy, attitudes towards illness and causal attributions may all have an important role to play in determining not only emotional outcome, but also physical recovery.

3.1: The Efficacy of Rehabilitation Programs

A distinction should be made between those studies which simply measure psychosocial outcome over a set period of time, and those which assess adjustment in patients who have undergone a planned, structured rehabilitation program during the same period after return from hospital. While Langosch et al. (1983) purport to investigate psychological and vocational outcome of rehabilitation in M.I. participants, no mention is made of exactly what program these individuals went through during the course of the study period. The passage of time should not be confused with rehabilitation.

The overwhelming focus of most cardiac rehabilitation programs in both the U.K. and the U.S.A. has been physical exercise (Lewin 1994;1995). Erdman (1990), in a review of the literature on cardiac rehabilitation, clearly distinguishes physical from psychosocial programs, with substantially more literature being reviewed for the former type of rehabilitation.

3.2: Exercise-Based Rehabilitation Programs

Despite there being agreement for the need for rehabilitation programs following M.I. (W.H.O. 1993; Horgan et al. 1992), as many as 50% of health boards in the U.K. have no such guidelines for patients who leave hospital after their M.I. (Horgan et al. 1992). Lewin (1994) states that few Scottish patients receive a comprehensive rehabilitation service following M.I. - one that encompasses biological, psychological and social

needs, as well as secondary prevention. This may be due to poor organisation of services and a lack of standardised outcome measurement.

Horgan et al. (1992) describe perhaps the most widely used rehabilitation program, which is out-patient based and has 5 "phases". It begins with explanations of the M.I. and information provision while in the hospital. Formal exercise regimes begin some 4-8 weeks after the M.I., with exercise testing throughout the next 6-12 weeks. Sessions with the dietician, psychologist, vocational counsellor and pharmacist may also be arranged. This program's individualistic approach appears to pay scant regard to social factors (such as the role of partners and family members in the rehabilitation process) which the World Health Organisation (1993) suggest should be incorporated into a comprehensive package of rehabilitation.

In a comprehensive review of 22 randomised studies, O'Connor et al. (1989) conclude that those assigned to exercise rehabilitation were at significantly reduced risk of death and reinfarction than those in comparison groups. This was evident after an average of 3 years post-infarction. In a comparison of outcomes for each year after infarction, those using exercise were at reduced risk for sudden death at one year, but no statistically significant improvements for this outcome were seen at either two or three years post M.I. Unfortunately, this study failed to fully account for the role of supplementary interventions in the trials reviewed, which limits the findings on the effects of exercise alone. Lewin (1995) points out that many studies reviewed in such meta-analyses have high drop out rates by those offered such forms of rehabilitation.

While some studies have shown that exercise programs help to reduce anxiety and other affective responses to M.I. (e.g. Erdman et al. 1986), others have shown a surprising increase in anxiety after intervention (Stern & Cleary 1981; van Dixhoorn et al. 1983). The cardiovascular effects of physical exercise may be anxiety provoking for some patients. Lewin (1995) notes that the psychological effects of exercise programs have not been fully proven. The study by Stern & Cleary (1982) seems to confirm this view. While some short-term gain seems to be evident in those undertaking such programs, longer-term outcome appears to be less encouraging in terms of return to

work and anxiety levels (Danchin & Goepfert 1988; O'Rourke et al. 1990). Exercise training may be beneficial in the short term through enhancing the person's self-efficacy and feelings of control over their prognosis (Lewin 1995). In a fully randomised study of 180 post-M.I. patients, Burgess et al. (1987) compared an exercise group with those assigned to ordinary aftercare. While anxiety and depression were lower in the experimental group at three months, levels were comparable between both after 1 year. Interestingly, the lowered anxiety and depression was also associated with less reliance on support from family and friends. One might speculate on what effect this increased independence had on family relations.

Erdman (1990) rightly points out that the equivocal findings of some studies of exercise-based rehabilitation may be due to the mean values which are often the mainstay of result presentations. While such averaging helps to clarify overall findings, such a method fails to identify which particular aspects of exercise are beneficial, and for whom. For patients who deny the existence of their illness, rehabilitation programs may prove to be of little benefit, as such individuals are unlikely to exhibit or develop the required motivation to gain significantly.

The above studies deal with rehabilitation on a largely individualistic basis, targeting the patient specifically for intensive input, often over the course of several weeks (Lewin 1994). The role of other family members such as the spouse in the rehabilitation process can have a profound effect on that individual's perceptions of the patient's capabilities (Taylor et al. 1985). These perceptions may in turn affect how the spouse behaves towards the patient, especially with regard to overprotectiveness borne out of anxiety.

3.3: Psychosocial Rehabilitation Programs

Psychosocial rehabilitation often focuses upon the emotional reaction to M.I., and may also help educate the patient regarding lifestyle change. Such programs aim to help the patient cope more effectively with the short- and longer-term consequences of their

illness (Erdman 1990). Studies of information provision regarding risk factors have been shown to be effective in reducing anxiety and also producing some short-term changes in activity levels and high risk behaviours such as Type A patterns (Theorell 1982; Friedman et al. 1984). Through the use of relaxation training alongside exercise regimes, additional gains through lowered blood pressure and reduced cardiac events have been demonstrated (Van Dixhoorn 1987; Patel 1985).

In a study of psychotherapeutic intervention during hospitalisation, Gruen (1975) randomised 70 patients to treatment and control groups. Following intensive daily therapy to;

“unearth psychological resources and hidden strengths” (page 223),

positive and significant outcomes for the therapy group were observed. These included fewer days in intensive care and in hospital generally, along with reduced anxiety and depression. Lewin (1995) notes that the findings of this study are compromised by unsatisfactory randomisation techniques. The study also did not control for the role of significant others in the lives of patients assigned to either group. While the groups were matched for marital status, aspects of the marital relationship including support and spouse anxiety were not considered.

Oldenburg et al. (1985) compared two intervention groups with a routine care control group, involving a total of 46 participants who had experienced a first M.I. The two intervention groups consisted of an education, relaxation and counselling group, and an education and relaxation only group respectively. Patients were randomly allocated to each group. Outcome measures included psychological health, lifestyle, and return to work. Despite their being no significant differences between the groups on infarct severity, GHQ scores and GP visits on admission, follow-up over the next year after discharge showed significant benefits for the experimental groups, who gained significantly in terms of better psychological health. While all 3 groups did better in the first six months regarding lifestyle, these gains were maintained at 12 months only by the two experimental groups, most especially for the counselling group. No comment

was made, however, of findings from the marital dissatisfaction scale used in the study, which may have provided useful information regarding the role of social factors in the use of relaxation and education provision. Such a role may have included encouragement and support for using such interventions.

3.4: Summary & Conclusions

The literature on rehabilitation following M.I. most often focuses upon physical exercise-based programs. While evidence exists for the efficacy of both physically- and psychosocially-based programs, few of either kind detail the role of the wider family network in determining the outcome of rehabilitation. The most effective rehabilitation programs may be those which are individually geared to suit patient needs, emphasise medical, psychological and social factors in their composition, and are long-term in their nature. As such, home- or community-based strategies may well prove to be the most beneficial, and have been shown to be as effective as hospital-based interventions (De-Busk et al. 1985; Bethell & Mullee 1990; Lewin et al. 1992). Surprisingly few health authorities appear to have the resources or the motivation to initiate such programs.

4.0: The Contribution of Health Psychology to Rehabilitation

Most of the studies described above focus on mean outcomes regarding psychological morbidity and physiological performance. Experimental designs such as these may fail to identify those individuals who do not benefit from rehabilitation programs. These studies fail to take into account the psychological processes by which people come to gain from interventions.

4.1: Health Psychology Constructs

Many rehabilitation programs fail to take into account expectancy-value or social cognition models from health psychology which predict behaviour change and compliance with interventions. Some of these factors, such as self-esteem and self-efficacy have already been alluded to elsewhere in this review. Other factors have also shown to be important in determining the outcome of attempts to alter lifestyle and recover from illness. These have included health value, a measure of how much the individual values their own health in relation to other aspects of their life (Wallston et al. 1976). This measure has been found to be closely linked to health and recovery locus of control (Levenson 1973). The construct of health locus of control (Rotter 1966) sprang from social learning theory, and suggests that those with internally orientated loci of control perceive that reinforcements for their behaviour are contingent upon their own efforts. Those with an external locus of control see outside influences beyond their control as determining their lifestyle. Some evidence suggests that those with an internal health locus of control are more likely to engage in health protective behaviours (Pitts & Phillips 1991).

The construct of self-efficacy (Bandura 1977) also emerged from social learning theory. It suggests that people's beliefs and expectancies regarding how efficacious they feel themselves to be in changing their behaviour will determine the likelihood of them changing that behaviour.

Causal attributions which people assign to their illness are based on past events (Kelley & Michela 1980). Attributions are beliefs held to explain the reason for a particular event. This may include the illness from which they are currently suffering. Much work has been done on this type of belief within the M.I. field. Overlap exists between this concept and other beliefs such as perceived control (Marteau 1995). It may be that attributions regarding the cause of an illness in the past subsequently predict behaviours which enhance health (King 1982). In a replicated study with over 100

post-M.I. patients, Fielding (1987) found that psychological causes for M.I. (worry, overwork etc.) were given just as frequently as medical attributions such as smoking and diet. Despite this, the patients saw the medical factors as being more under their own control than worry and stress, and also saw the medical factors as being more serious than psychological ones. Lewin (1995) notes that such misconceptions regarding the nature of an M.I. may come to be inadvertently reinforced by friends, family, and medical staff alike.

Many of the studies which have attempted to predict recovery or changes in behaviour in those with M.I. and other health problems have concentrated upon only one of the above constructs at a time. These constructs on their own often predict very little of the variance in health behaviour changes.

4.2: Health Psychology Models

Attempts have been made to integrate individual theories into coherent models. The health belief model (Becker 1974) has been used to predict compliance with particular health promotion campaigns. This model looks at how people's perceptions of various health factors may come to influence their subsequent behaviour. It states that a person's beliefs regarding their vulnerability to illness, how life-threatening they see the illness to be, and the relative "pros" and "cons" of actually carrying out the behaviour will determine the likelihood of health-promoting behaviours being carried out. Cues to behaviour change may be internal or external, such as actual illness in the person or information regarding health promotion from another person or source. Another model considers the role of important others around the individual (Fishbein & Azjen 1975). The theory of reasoned action predicts whether a person will change their behaviour based on their own subjective attitudes towards that behaviour, and on their subjective norms based on whether others think that behaviour is useful in contributing towards health (Marteau 1995). This model has recently been updated by Azjen (1988) to incorporate an individuals beliefs about control over behaviour.

Other models are described by Pitts (1996). Few have been applied directly to those recovering from M.I. The illness representation model (Leventhal & Cameron 1987) considers the role of cognitive representations, appraisal and coping in the decision to take health-promoting behaviours. The protection motivation model (Rogers 1984), looks at how motivational factors such as perceived threat of illness and self-efficacy determine protective health behaviours.

4.3: Summary & Conclusions

A variety of individual psychological concepts may explain participation or non-participation in health-promoting behaviours. Many of these are mentioned in the literature pertaining to M.I. recovery. On their own, they have proved ineffective in predicting behaviour change, at least in some populations. Only when integrated into theoretical models have they proved informative. Less is known about how these models might relate to the M.I. patient population, how they are affected by social factors, or how constructs such as self-efficacy, locus of control and attributional style may determine levels of psychological distress during recovery.

5.0: Family Factors in Long-Term Recovery

In a general overview of the long term effects of M.I. upon family relations, Sarafino (1990) states that premorbid factors may be important. Some patients may have experienced financial or sexual difficulties before their M.I., and these problems may be compounded by the acute illness. Invalidism and physical deconditioning often seen on return home (Smith et al. 1984) may be inadvertently reinforced by other family members, whose over-involvement may leave the patient dependent and helpless. This over-involvement may arise out of mistaken beliefs on the part of spouses regarding the patient's physical capabilities and the nature of the disease process. Taylor et al. (1985) provide evidence for this point.

Ross et al. (1990) present evidence for families being generally good for the health and well-being of members, but qualify this by noting that the emotional, psychological and physical benefits accrued apply only to those families where the marriage is satisfactory (Gove et al. 1983). These benefits may come about as the result of three main factors. Firstly, marriage may provide a sense of security and belonging. This may only be the case if partners are married to one another, as opposed to simply living together. Secondly, marriage may provide both emotional and instrumental support for all family members, which may lower levels of anxiety, depression and physical illness. This appears to be the case only when support is equal between partners. Finally, marriage may afford the family economic well-being. The authors state that married couples tend to be less depressed even when compared with single people with similar levels of support and income. They suggest that this may be because non-married individuals have less social support in general, and experience less protective forms of support.

Ross et al. (1990) go on to provide evidence to suggest that the presence of children in the home has no significant effect on the physical health of parents (Verbrugge 1983), but that marriage satisfaction is at its highest when there are no children at home. Indeed there appears to be a relationship between such satisfaction and the number of children at home (Pleck 1983). Whether this dissatisfaction is because of the presence of the children themselves or the economic burden they place upon families is not clear.

As with the prospective study by Eaker et al. (1983), Ross et al. (1990) cite evidence that in families where wives are in employment, husband's distress is greater, perhaps due to a perceived reduction in his power within the household (Rosenfield 1980). Despite the husband suffering psychologically, employment seems to lower depression in the wife. Overall, a perception of inequality in the amount of work done leads to tension and dissatisfaction.

These findings may have implications for the family of a recovering M.I. patient. Those dissatisfied families with children at home may have to cope with the added burden of

the anxiety and depression of the recovering M.I. patient. This may increase already high levels of tension within the family. Also, those families where the M.I. patient is male and his wife works may display higher overall levels of tension than other families if the husband perceives an unequal workload distribution, which he may do if off work during initial recovery.

In a study of 24 post-M.I. participants between three and nine months after return home from hospital, Wishnie et al. (1971) demonstrated using tape recorded interviews that well over three-quarters of the sample showed psychological distress. Nearly two-thirds of the sample experienced arguments with their families over aspects of rehabilitation such as physical exercise. Nearly half of the subjects also spontaneously reported that they were concerned with physical symptoms, such as being aware of their heartbeat before sleep. Periods of convalescence seemed to produce marital conflict even when the relationship had been stable before the illness. These conflicts appeared to centre around dependency, with many spouses tending to be overprotective, shielding their husband or wife from negative information regarding the illness or rehabilitation. Much of this overprotectiveness seem to stem from feelings of guilt, especially in wives, that spouses had in some way precipitated the heart attack in the first place. This often gave rise to arguments, with spouses becoming even more concerned lest their own anger provoke another M.I.

Gullage (1979) states that those patients who have formally been active and showed Type A behaviour, now have to deal with being at home all day for a prolonged period, coping with often stressful interactions with an anxious spouse and children. Problems of interacting with others under stress from the experience may add to the difficulties of adhering to any rehabilitation program, and maintaining relationships within extra-familial social networks.

In the study by Mayou et al. (1978) cited earlier, symptoms such as mild irritability, tension and poor concentration were evident, and had deleterious effects on family life. Despite this, nearly a quarter of the sample felt that their marital relationship had improved over the course of the year in terms of warmth of interaction. Only 15% felt

that warmth of interaction had increased in the family as a whole, and this seems to provide evidence for the claim made by Ross et al. (1990) regarding the potentially negative effects of children upon marital satisfaction. It was only when the children became older did they become a source of support for their parents. Wives appeared to be particularly protective of their recovering spouses, even at one year. This protectiveness took the form of reminders regarding activity levels, and doing the household jobs traditionally done by the male. A quarter of male patients resented this perceived intrusion, and often felt frustrated when their wives were perceived as doing a job poorly.

In a large study of 400 male patients and their wives three years post M.I., Waltz et al. (1988) looked at how intimacy and conflict in the marital relationship influenced the cognitive processes involved in psychological recovery. Using regression equations, they showed that marital conflict predicted high levels of emotional distress through the development of negative subjective health perceptions on the part of the patient, spouse and general practitioner. While levels of intimacy were not predictive of anxiety in the patient, they were associated with depression. Even in those patients with good physical prognosis after their M.I., less depression was seen in those with high intimacy marriages than those typified by conflict. This finding is explained by the possibility of high intimacy marriages providing opportunities to confide and maintain self-esteem. Such intimacy was also discriminative of those with more or less severe depression during the study period. The authors suggest that a stressful home environment with high marital conflict might reflect certain components of the Type A behaviour pattern (Friedman & Rosenman 1959), such as hostility.

The study by Waltz et al. (1988) seems to provide evidence for patient's cognitions regarding their health being dependent, at least in part, on the social context in which they find themselves. While they suggest that those patients displaying hostility and mistrust may have poorer marital relationships as a result, they do not appear to consider the effects of the acute event upon the spouse as Mayou et al. (1978) do. Such effects might include increased anxiety and overprotectiveness, which may in turn put further strain on the relationship and lead to conflict (Gullage 1979). The study did

not control for the effects of children within the family (Ross et al. 1990; Gullage 1979).

Thomson & Cordle (1988) looked at the responses of 76 wives in a follow-up study after their husbands had experienced an M.I. They suggest that stress in wives may manifest itself in vulnerability, and overprotectiveness towards the husband. A questionnaire was administered to spouses some six weeks after the acute event, and measured emotional and physical symptoms, concerns about their relationship with the patient now and in the future, and the types of support received from others. Two-thirds of the sample reported high anxiety, and over one-third of wives reported severe depression. Common concerns included husbands' career prospects and the family finances. Nearly three-quarters of the sample expressed worry over the patient's ability to cope. These concerns appeared to remain despite most of the sample feeling that they received sufficient support from others since their husbands returned home from hospital. The majority of wives (63%) felt that they had not been given enough opportunity to ask questions regarding their husband's illness.

Moser et al. (1993) surveyed 49 couples five months post-M.I. There was considerable differences between spouses and patients in terms of the type of information each wanted. Spouses expressed a wish to know about the patient's psychological recovery and to talk with their partner about worries. Patients desired more honesty in explanations regarding their illness and to talk to health professionals about such explanations. The authors suggests that these findings outline the importance of the personal needs of the spouse during the rehabilitation phase. How might the relationship between spouse and patient be affected by differing needs? If the spouse wishes support from the patient in terms of talking over concerns, but is thwarted by a patient desiring a confiding relationship with the health professional, tension may arise. Might tension result from unmet needs of the spouse or patient as both are left to get on with the process of recovery largely alone (Stern & Pascal 1979)? How might this tension manifest itself, and what effect would it have upon the patient's long term recovery? Meeting the differing needs of patients and spouses may be an important aspect of the rehabilitation process (Mirka 1994).

In clarifying the many difficulties that a spouse faces when their partner returns home from hospital, Stern & Pascal (1979) note that it is the family in which the patient recovers that will determine such things as compliance to rehabilitation and the sorts of care afforded to that patient. Some spouses and children may become angry with the patient as a result of the new demands placed upon them, while others become overprotective in fear of upset affecting the health of the patient. Results from two previous studies (Stern et al. 1976, 1977) had highlighted two types of patient: those who denied their illness, and those who became depressed. The former group returned to work sooner and had better sexual functioning than the depressed group. Stern & Pascal (1979) report on the spouses of those 38 patients studied by Stern et al. (1976), who were assessed using standardised measures of anxiety and depression. Over a quarter of spouses, all of whom were female, reported being clinically anxious or depressed. Providing background evidence for the assertions made subsequently by Sarafino (1990) regarding premorbid factors in adjustment, they found that in those anxious or depressed spouses who felt responsible for the patient's M.I., family problems concerning their children had been discussed in the month prior to the infarct. Those spouses who reported high levels of anxiety all had husbands who denied their illness to a greater or lesser extent. Many such spouses often needed to 'pester' their husbands in order to receive attention prior to the M.I. After the acute event, many felt unable to make approaches for companionship, fearing for their husband's health. This "dilemma" produced high levels of anxiety.

It appears from the study by Stern & Pascal (1979) that for many needy spouses, especially females, the M.I. resulted in a decrease in communication with the patient, and an increase in their own levels of anxiety and unhappiness. Some then became over-involved in their partner's care in an attempt to regain a sense of control. Again, one might speculate how patients may respond in turn to such over-solicitousness, and how this response affects the anxiety and coping style of the spouse in the longer term. As this study was not longitudinal in nature, we can only hypothesise about such effects.

5.1: The Michigan Family Heart Study

Perhaps the most in-depth study of the role of the family in M.I. rehabilitation was that undertaken by James Coyne and his colleagues in Michigan, U.S.A. (Coyne et al. 1990). This study aimed to look at the response of married couples to the stresses imposed by an acute M.I. in terms of coping and the support received by each partner from the other.

5.2: The Pilot Study

The pilot work for the study involved couples who had experienced an uncomplicated M.I. drawing up the questions to be asked in the project. These couples met in “focus groups” to discuss a variety of issues relating to how they had coped with the acute illness. This prevented researchers imposing their own theoretical views upon participants from the outset, and gave rise to issues which concentrated more fully upon the relationship and wider social support networks. The groups showed how the M.I. event was as much of a stressor for the spouse as for the patient themselves.

An initial qualitative finding from the group discussions was that female spouses tended to care for their ill husbands when they returned from hospital. This was not the case for female patients, who often picked up their role of caring for their husbands almost immediately. These changes were made without overt discussion, with patients often not being aware of, or making explicit, the changes made by the spouse to help them. Coyne et al. (1990) do not discuss whether such differences gave rise to tension between couples through resentment on the spouse’s part. Perhaps such implicit accommodation represents one of the etiological factors involved in the development of the anxiety in spouses discussed by Stern & Pascal (1979) above, who noted a decrease in communication during recovery.

Couples in the focus groups also admitted to conflict. Such conflict appeared to centre around dealing with each other's stresses and agreeing on how responsible each was for the patient's continued physical rehabilitation. Spouses often had such a strong sense of responsibility for the patient's well being that they would ignore their own interests and the need for the patient to develop independence. Arguments sometimes arose as a result of the spouse's perception that the patient was doing too much physically, or indeed not making changes to lifestyle behaviours that might enhance the recovery process. A 'power struggle' would then ensue, with spouses often becoming insistent and pestering in their approaches.

5.3: The Main Study

From the findings of the pilot study, a questionnaire was administered to 56 couples who had experienced an M.I. on average some six months previously (Coyne et al. 1990). This detailed measure (The Michigan Family Heart Questionnaire) tapped the quality of the marriage prior to the illness, amount of discussion with each other regarding the illness, contact by the couple with health professionals, psychological and functional health, and patient self-efficacy. The study also looked at how couples coped with the illness and the presence of each other, using three factors. These were "active engagement", which referred to involving each other in discussions and decision-making, "protective buffering", the tendency to hide concerns or give in to the other in arguments, and "overprotectiveness", where spouses rated how intrusive or interfering they were in their partner's life. The authors state that spouses need to find a balance between contributing to their partner's recovery, preventing conflict and caring for themselves as individuals. Some wives may seek to decrease their own anxiety by inhibiting their husband's attempts to comply with exercise regimes (Taylor et al. 1985). They ask what the patient or spouse themselves might do to engender such anxiety in the first place, and how certain types of coping might be linked with psychological distress.

This study showed how important spouse behaviour actually was in determining the patient's level of recovery, and how particular styles of interaction contributed to either higher or lower psychological distress on the part of both patient and spouse. They also showed that coping was not just an individual task. How couples coped with the presence of each other was also an important job of recovery.

The use of protective buffering on the part of wives (hiding concerns and giving in to arguments) was related to their own distress. When patients used the same protective buffering, this was associated with wife psychological distress. There was no relationship between patients' use of active engagement and wives distress. Overall, the greatest variance in psychological distress in wives was accounted for by their use of protective buffering. In support of findings from Taylor et al. (1985), spouse's perceptions of how efficacious the patient felt in making lifestyle changes and returning to previously enjoyed activities were strongly related to the patient's own sense of self-efficacy and subsequent behaviour. Patients' use of protective buffering was inversely related to their own perceived levels of self-efficacy, suggesting that dealing with the distress of the well spouse was detrimental to some patients' recovery.

The use of active engagement on the patient's part (involving the spouse in their rehabilitation) predicted higher levels of self-efficacy. The use of overprotection by spouses contributed to lowered levels of self-efficacy in the patient. The spouses use of a protective buffering style with their partner contributed to patients self-efficacy, but also contributed to their own distress (Coyne and Smith 1991; Coyne & Fiske 1992). What was effective within the marital relationship in aiding the patient's recovery was detrimental to the well-being of the spouse. This finding appears to support and expand on the "dilemma" that spouses face which was described by Stern & Pascal (1979).

These findings were dependent upon the premorbid quality of the marriage as perceived by couples. With higher quality marriages, wives in fact did not become

distressed through the patient's use of protecting buffering. Poorer quality marriages saw a much stronger association between wife distress and patient protective buffering.

5.4: Summary & Conclusions

There appears to be a trade-off between the psychological distress experienced by the spouse as a result of their denial of problems and giving in to arguments with the patient (protective buffering), and better physical and psychological recovery in the patient. There was an increased sense of self-efficacy and psychological well being on the part of the patient as a result of wives using such coping styles (Smith & Coyne 1988). It appeared that no matter what type of coping wives used, their distress increased. This was especially the case for protective buffering. Husbands' use of protective buffering was also positively associated with wife distress. This was dependent upon how couples rated the quality of their marriage before the M.I., and was seen mostly in "low quality" marriages.

The methodological problems and limitations of the Michigan Family Heart Study should be highlighted. Firstly, the main questionnaire did not appear to be fully standardised. The study authors also note that the measure of premorbid marriage quality was taken retrospectively. This may therefore not have reflected the true nature of the relationship's quality before the M.I. (Lewin 1995). Limitations of the study included the use of a cross-sectional design. It might be wondered how the association between relationship-focused coping, wife distress and patient recovery changed over time as rehabilitation continued. The study looked at wives of male patients only, and did not consider how relationships between the above factors may differ with male spouses and female patients. The study looked only at self-efficacy. Other cognitive aspects such as self-esteem, locus of control and attributional style may also contribute to the development of psychological distress. There is some evidence that all of these cognitive concepts are closely interrelated, at least in certain populations (Ferguson et al. 1996).

Finally, little was apparently made of the overprotective style that wives used to relate to their partner, and which was featured in a study in which Coyne himself was involved (Fiske et al. 1991). This study showed that wives overprotectiveness of their husbands did not affect the patients self-efficacy, and in fact led to couples becoming closer following the M.I., despite such overprotectiveness predicting wife distress. On the other hand, wives use of hostile and critical comments had a negative impact on the husband's psychological well-being and self-efficacy. Such couples were less close after the M.I.

Aspects of active engagement as described by Coyne & Smith (1991) may be similar to the concept of overprotection. Such a positive coping style may develop into more negative methods of relating as spouse distress increases. This might explain spouse distress given the findings of Coyne & Smith (1991), and the rise in patient self-efficacy which Fiske et al. (1991) noted as a correlate of over-involvement. When might useful enquiries regarding patient health become intrusive? Might mutual discussion develop into hostile and critical comments on the part of the spouse when efforts to engage in recovery are perceived as inadequate? It may be that we cannot consider relationship-focused coping styles as stationary, but as those that change with time. None of these questions can be answered satisfactorily in a cross-sectional design as employed by the Michigan Family Heart Study.

6.0: Social Support: Effects on Health & M.I. Recovery

Many studies appear to suggest that social support provides a source of indirect "buffering" against a variety of stressful life events such as unemployment (Ullah et al. 1985) and ill health (Marmot 1983). Coyne & Downey (1991) note that those meeting the criteria for depressive disorder tend to report fewer close relationships and less satisfaction with those friends they do have. These people also tend to have greater levels of marital dysfunction and less confiding relationships with their spouse. It appears that the quality of relationships with those closer to the individual (such as spouses) is more highly correlated with levels of depression than relationships with

more distant contacts. Contact with others may not simply represent examples of positive social support. Attention from social networks may prove to be a source of stress *and* support for the individual (Revenson et al. 1991). In a sample of patients suffering from rheumatoid arthritis, the effects of positive support (such as conveyance of affect or practical help) were not cancelled out by forms of support perceived to be problematic by the individual (such as criticism of effort or making unhelpful suggestions). Those patients with the least amount of positive support and greatest amount of problematic support from those closest to them were found to report the highest levels of depression (Revenson et al. 1991). This study suggests that while unhelpful support may be deleterious to psychological health, the beneficial effects of support perceived as helpful appear to be robust in helping the patient cope with illness.

The authors note that depressed patients may view some relationships in a more negative manner than may be justified. This raises the important issue of the reliability of reporting by psychologically distressed individuals, and the need to obtain information regarding social support from sources other than simply the patient (e.g. via triangulation (Good & Watts 1994)).

Those studies which have investigated the role of social support in recovery from myocardial infarction seem to produce conflicting findings, due mainly to differences in methodology and definitions of "recovery" and "social support". Some have found no link between survival and amount of social support (Greenwood et al. 1995), while other studies have shown that satisfaction and amount of social support are clearly predictive of good recovery (Friedman & Thomas 1995). Some studies have noted that social support does not begin and end in looking at the amount and type of contact the individual under study may have. Support can be both good and bad in nature, depending on how it is perceived (Dakof & Shelley 1990; Revenson et al. 1991). In the literature on the effects of unemployment, the effect of changes in network density (the closeness of members in an individual's support system) and network family concentration (the proportion of family to non-family members in a network) have been studied by Jackson (1988). He notes that unemployment results in weak non-

family ties being severed, and an increased reliance upon close family members such as the spouse. Given that myocardial infarction may represent a similar change in life circumstance, it is to be wondered whether it also has an effect upon social support similar to that outlined by Jackson (1988). If family members are relied upon more (contrary to the findings of Burgess et al. 1987), what effect does this have on their own well-being and how they interact with the patient? Might the effects on health of extra-familial social support mitigate against the detrimental effects of such distress within the family? M.I. patients may be away for a period of time from a work environment which normally provides the bulk of such support.

Coyne & DeLongis (1986) note that much research on the role of social support on health fail to acknowledge both the detrimental effects of support and the effects of trying to obtain support from others. They review some evidence which has shown an association between the number of social network members who were sources of stress and the number of symptoms reported. A lack of social support quality and quantity may be as a result of the individuals attempt to withdraw from the negative aspects of such support. This may be the case with some M.I. patients who may not have the emotional or physical resources to cope with the stress created by such poor quality relationships, especially in those in the early stages of recovery who may be psychologically distressed. What effect might this withdrawal have on subsequent psychological recovery, and how might spouse and other network members respond to such withdrawal? The evidence presented by Coyne & DeLongis (1986) would suggest that patients should benefit from decreasing their contact with those who create conflict. What if withdrawal is not possible, such as within marriage where the source of negative support comes from the spouse? In contradiction to much of the social support literature which focuses on the positive effects of closer social links, other evidence from work with family therapists emphasises the need for the extrication of individuals from emotionally over-involved and intrusive family members. They suggest that such emotional over-involvement may manifest itself through intrusiveness, worry and indulgent behaviour, which in turn reduces patient autonomy and responsibility.



7.0: The Concept of Expressed Emotion

The study by Fiske et al. (1991) suggests that hostility and criticism on the part of spouses may be the most detrimental way of relating to the M.I. patient in terms of subsequent psychological distress and perceived self-efficacy. Such hostility and criticism partly make up the concept of "expressed emotion" which has been shown to predict relapse in certain types of psychiatric problems (Vaughn & Leff 1976).

Much research has been carried out over the past 30 years into how family dynamics may affect recovery in schizophrenic patients returning home after periods of hospitalisation. The term "expressed emotion" refers to the expression of feelings such as hostility, criticism and emotional over-involvement, mostly on the part of siblings and parents towards the patient. High levels of such expression have been shown to be associated with greater risk of relapse in such patients. Brown et al. (1962) demonstrated that relapse rates among those patients returning to high expressed emotion families were more than double those of individuals returning to families displaying lower rates of expressed emotion. Vaughn & Leff (1976), using a similar paradigm, observed a 54% relapse rate in schizophrenics of high expressed emotion families, as compared to only 16% relapse in those of low expressed emotion families after a nine month period. In a review of recent research on expressed emotion with this population, Kavanah (1992) notes that the average relapse rate for patients in high expressed emotion families is 48%. In explaining the relationship, Kavanah (1992) suggests a dynamic stress-vulnerability model, whereby critical and hostile comments impinge upon a variety of patient cognitions such as social perceptions, emotional reactions and self-efficacy. This results in effects on symptoms and subsequent behavioural manifestations. More recently McRae et al. (1993), in one of their Nithsdale Schizophrenia Surveys (XI), showed that over a five year period those patients living in low expressed emotion families who did relapse, did so significantly less often over the period than those patients whose families exhibited high or variable expressed emotion.

7.1: Expressed Emotion in Non-Schizophrenic Populations

Some evidence is available for an association between criticism, emotional over-involvement, and problems such as depression and eating disorders (Hooley et al. 1986; Flanagan & Wagner 1991; Florin et al. 1992; van Fruth et al. 1996). There also exists conflicting evidence for a link between family members' critical comments and poor blood glucose control in those with insulin-dependent diabetes (Stevenson et al. 1991; Koenigsberg et al. 1993). Critical comments on the part of care workers has been shown to predict increased negative behaviours over time in patients with Alzheimer's disease (Vitaliano et al. 1993). These studies suggest that at least some components of the expressed emotion concept may be relevant to non-schizophrenic populations.

From the findings by Fiske et al. (1991) and Coyne and Smith (1991), it appears that only certain aspects of the expressed emotion concept contribute to good psychological recovery by M.I. patients. While hostility and criticism appear to have a detrimental effect upon patient psychological distress and self-efficacy, over-protectiveness may have little or no effect on patient functioning (Fiske et al. 1991).

8.0: The Current Study

The present study wished to address some of the questions raised by the study findings outlined in the preceding review. It also wished to address at least some of the methodological problems seen in the studies of M.I. recovery, such as poorly standardised measures, cross-sectional design, and the use of narrowly-defined dependent variables.

The proposed study wished to investigate the role of expressed emotion and other social support factors in psychological adjustment to myocardial infarction.

Expressed emotion may stand as an example of a potentially detrimental type of support. It is also important to investigate what effect levels of expressed emotion within the patients themselves have upon the functioning of important others within the family dynamic (Florin et al. 1992). It was noted that attitudes and behaviours such as hostility and criticism may contribute to patient distress and relapse. There appears to be less evidence available regarding how much each component of expressed emotion might contribute to such distress. Most of the literature tends to pool these components into a single expressed emotion score, and this may obscure the relative contribution of each component.

It does not appear that the concept of expressed emotion has been studied within the population of surviving myocardial infarction patients. The evidence reviewed has shown that rehabilitation after M.I. is not static. It is also reasonable to suggest that levels of expressed emotion components change over time. What effect might they have on psychological distress, self-esteem, self-efficacy, locus of control and other aspects of adjustment? Ultimately, the present study wished to see what predictive power the concepts of expressed emotion and social support have with regard to psychological adjustment at two points in the recovery process.

8.1: Hypotheses

1. The hypothesis is made that decreased self-efficacy arises out of the use of hostility and criticism on the part of the spouse. Such aspects of expressed emotion will therefore predict levels of patient self-efficacy over time. As a result of lowered self efficacy, patients will become more anxious and depressed, and display more expressed emotion themselves as a behavioural consequence.

2. Some evidence suggests that emotional over-protection by the spouse as an aspect of expressed emotion improves psychological and physical health in the M.I. patient, at least in the short term. Intrusiveness as a form of over-involvement will therefore predict better psychological adjustment.

3. Evidence suggests that several psychological constructs contribute to the patient's recovery over time. In this study it is hypothesised that aspects of adjustment, such as anxiety and depression, self-efficacy, self-esteem, locus of control, attitudes towards disability and attributional style will be inter-related. Some of these variables will themselves predict levels of psychological distress in patients.
4. Significant increases will take place over time in levels of expressed emotion in both the patient and spouse. As the patient comes to terms with the limitations which their M.I. imposes upon them, this will give rise to frustration and conflict.
5. Significant changes will take place in the nature of the patient's social support networks as a result of illness, due to the nature of M.I. recovery and the emotional strain placed upon the patient as a result of the illness. Convalescence, and being off work during the recovery period will lead to a reduction in extra-familial contact over the study period. Evidence suggests that any reduction in familial support (but not extra-familial support) will predict better psychological recovery over time.
6. Evidence suggests that psychosocial variables predict recovery from M.I. better than physical variables such as the severity of the infarct. Expressed emotion and social support will therefore predict more variance in psychological and physical recovery than physical and demographic factors.

METHODOLOGY

Design

A longitudinal study of a single group of patients was undertaken, using a repeated measures design over two points in time. Measures were administered as close in time to the acute illness as possible (mean 22 days, S.D. 10.29), and then again after a period of convalescence at home (mean 68.37 days after initial interview (S.D 14.41)) . Psychological adjustment factors represented the dependant variables. Expressed emotion, social support, physical and demographic factors represented the independent variables.

Sample

The study group was drawn from those patients entering the Coronary Care Unit (C.C.U.) of the Aberdeen Royal Infirmary (A.R.I.) between October 1996 and March 1997. Patients were required to have a confirmed diagnosis of acute myocardial infarction on entry to the C.C.U., and also be married. No other inclusion criteria were used. Approximately 110 suitable patients were identified. From these, thirty eight couples agreed to take part. Seventy-two patients identified as being suitable were not able to be interviewed due to continued ill health. Fifty-one of these were male, and 21 were female. Of the thirty-eight patient-spouse pairs who agreed to take part, eight subsequently dropped out of the study, either through declining to take part or being uncontactable. These eight consisted of five males and 3 females. No other data on these potential participants was available. This left 30 pairs, who made up the experimental group at initial interview (Time 1). At follow-up (Time 2), one participant had died, and two patients declined to participate further in the study. This left a total of 27 pairs who took part in follow-up interviews. The mean age of the original 30 patients was 64.3 years (S.D. 10.95), and ages ranged from 41 to 84 years. The group consisted of 23 male and 7 female patients. Only one of the couples had no

children, with the rest of the sample having from 1 to 5 offspring. Five couples had one child living at home during the study period, while another five had two children at home. The remainder of the couples lived alone. Mean social class for the sample was 2.63 (S.D. 1.19), based on patient occupation (Census Classifications of Occupations 1991).

Measures

Five measures were used in the study, three of which were standardised:

1. General Information and Demographics Questionnaire (see Appendix 1).

This measure, designed by the author and non-standardised, elicited general demographic information, including age, sex, family composition (number of children, children living at home), and socio-economic status. It was administered at Time 1 only.

2. Nottingham Adjustment Scale (N.A.S.) (see Appendix 2).

This standardised questionnaire was originally developed for use with visually impaired and blind study participants (Dodds et al. 1991). It incorporates a number of psychological variables thought to be important in determining rehabilitation. Such variables include anxiety, depression, self esteem, self-efficacy, recovery locus of control, acceptance of disability, attitudes towards disability, and attributional style. High scores on each subscale indicate better adjustment. The scale was developed through the administration of individual measures, such as the Rosenberg Self-Esteem Questionnaire (Rosenberg 1965), the Goldberg General Health Questionnaire (Goldberg 1981), and the Recovery Locus of Control Questionnaire (Partridge & Johnston 1989) to 50 visually impaired clients attending a vocational training centre. Using item-total correlations, questions on each variable which failed to discriminate

between clients (those with Cronbach's alpha of less than .5) were omitted. Subsequent inter-correlations on remaining items administered to a larger sample of 200 clients showed close association between all variables except attributional style, which was correlated with self-efficacy only. On the basis of this analysis, a 47-item scale was developed. Scores for each subscale based on data from 469 visually impaired clients were also produced (Dodds 1997, personal communication). Subsequent studies have validated the scale (Dodds et al. 1993), and assessed the effect of response bias in its use (Dodds et al. 1996). It has also been used to assess psychological outcome in visually impaired clients following nine weeks of vocational rehabilitation. (Dodds et al. 1994; Ferguson et al. 1996). These studies found positive changes in all of the above factors after this time, with the exception of attributional style. The stability of attributional style over time is used as evidence for it being more of a personality variable. Using LISREL modelling (Byrne 1990), Ferguson et al. (1996) constructed a model to explain the relationship between these variables. They noted that attributional style (defined as responsibility for success) may be related to anxiety, depression and self esteem (internal self-worth) both directly, and indirectly via locus of control and self-efficacy (self as agent). More perceived personal responsibility leads to more control, better mood, and more positive attitude towards self. Dodds (1995) asserts that the scale can be used with other client populations by simply omitting the wording relevant to visually impaired participants, substituting these for the client group under study. This was applied in the present study using wording relevant for M.I. patients. Answers were obtained on the basis of how clients had been feeling since their return from hospital (Time 1). At follow up (Time 2), clients were asked to respond on the basis of how they had been feeling over the past two weeks.

3. Level of Expressed Emotion scale (L.E.E.) (see Appendix 3).

This 38-item questionnaire was designed by Gerlsma & Hale (in press), following a factor analysis (Gerlsma et al. 1992) of a 60 item original version designed by Cole & Kazarian (1988). This and subsequent analyses yielded four factors, namely lack of

emotional support, intrusiveness, irritability and criticism. A total expressed emotion score is also be obtained by pooling subscale scores. Higher scores on each subscale indicate greater levels of expressed emotion. The Level of Expressed Emotion scale differs from more traditional measures of the concept such as the Camberwell Family Interview (C.F.I., Vaughn & Leff 1976), as it seeks to record *perceived* levels of expressed emotion, rather than observer-rated levels. This is done by getting the patient themselves to rate levels of expressed emotion which they perceive from significant others. Gerlsma et al. (1992) cite evidence that perceptions on the part of clients may predict more variance in relapse rates than expressed emotion rated through the C.F.I., at least in depressed patients (Hooley & Teasdale 1989). The measure's ease of administration made it preferable to more time-consuming methods such as the C.F.I. The L.E.E. has been shown to have good construct validity and predictive power with depressed clients (Gerlsma & Hale, in press).

The questionnaire authors measured the concept in patients as well as their partners. While the expressed emotion literature has traditionally taken a one-dimensional approach (seeing expressed emotion as coming from the relative or partner only), the present study wished, like the authors, to take a more balanced view, given the nature of pressures placed on both recovering M.I. patient and spouse. Both spouse and patient were therefore asked to complete separate, identical versions of the L.E.E. Participants were asked to rate a variety of behaviours on the basis of how accurately each statement reflected the behaviour of their spouse. At first interview (Time 1), patients and spouses were asked to rate each others behaviour based on the time period immediately following the patient's return from hospital. At follow-up (Time 2), couples rated each other based on the preceding two weeks. Couples were asked not to influence each other's answers during scale completion, and were supervised at all times by the sole investigator. Five scores were obtained for both patient and spouse at Time 1 and Time 2; perceived total expressed emotion, lack of emotional support, intrusiveness, irritability and criticism.

4. Supportive Behaviours Checklist (see Appendix 4).

This 13-item questionnaire represented an adaptation of the Inventory of Socially Supportive Behaviours (Barrera & Ainlay 1983), undertaken by Jackson (1988). It was originally designed for use with unemployed people, and measures both mobilised expressed support (verbally stated expressions of support), and mobilised instrumental support (physical help such as giving the subject a lift) over the preceding month. A correlation of .47 between both types of support was obtained from a sample of 301 unemployed men (Jackson 1988). The relationship of the supporter to the subject is recorded according to the categories of immediate family, not immediate family, and not related. The questionnaire also calculates network density as well as structure, by looking at the closeness of links among the subject's network. The measure contained items pertinent to the M.I. patient's situation on return from home, given that they too would be off work for some time during the recovery period. Again, patients were asked to respond in terms of support received since coming home from hospital (Time 1). At follow-up (Time 2), couples responded according to contact with others over the preceding two weeks. For simplicity, and reflecting the possibility of the couples having larger networks than unemployed individuals, contact was recorded as either immediate family or non-family, and no calculation of network density, or additional contact outwith the 13 items, was made. Six separate scores were obtained for each interview; total amount of either instrumental or expressive support (from 7 and 6 items respectively), family or non-family expressed support (from a maximum of 7 items), and family or non-family instrumental support (from a maximum of 6 items).

5. G.P. Additional Information Questionnaire (see Appendix 5).

After the second interview (Time 2), G.P.'s were asked to provide a subjective rating of how well they felt their patient had recovered since M.I. They were also asked to

provide qualitative information on how they had come to their decision. G.P.'s also reported the total number of attendances by the patient at their clinic between Time 1 and Time 2.

Procedure

Potential participants were recruited through liaison with C.C.U. and A.R.I. ward staff. Regular contact was made with the C.C.U. staff, who identified patients fulfilling the inclusion criteria. These patients were then contacted while on general wards. Informed consent was obtained at this point using a consent form approved by the local ethical committee (see Appendix 6). Patients were also given the opportunity to ask questions regarding the study. On receiving signed consent, additional information was obtained for the purposes of the study, including the patient's home address and telephone number, G.P. name and address, and current diastolic blood pressure (from bedside charts). Consenting patients were informed that they would be contacted by the sole investigator in the first few days following their discharge from hospital. After arranging the first interview soon after return from hospital, the patient's G.P. was contacted by letter (see Appendix 7) to inform them of the patient's participation in the study, and to request additional information on recovery and clinic attendances, after the second interview. First interviews (Time 1) involved both the patient and spouse, and took place in the patient's own home. These interviews lasted approximately 45 minutes. Patients were subsequently contacted to arrange a follow-up interview. Second interviews (Time 2) lasted approximately 30 minutes, after which G.P.'s were again contacted for the information on physical recovery and clinic attendances requested previously (see Appendix 5). Information on infarct severity was obtained from the C.C.U. computer. This took the form of peak levels of creatinine phosphokinase (C.P.K., obtained via blood tests), an enzyme which increases in quantity in the blood during infarct. This method of gauging the severity of illness has been used in a previous study of recovery in M.I. patients (Terry 1992).

Statistical Analysis

In addition to general descriptive information, paired Student t-tests were used to compare repeated measure scores of adjustment, expressed emotion and social support over between Time 1 and Time 2. Where applicable, scores for such measures were also compared to sample scores obtained by questionnaire authors, using one-sample t-tests. Correlational analyses were also undertaken to examine the relationships among adjustment variables, and also between these dependant variables and measures of expressed emotion, social support, demographics and physical health variables such as blood pressure and C.P.K. levels. From these relationships, standard multiple regression analyses were employed to examine the relative contribution of variables such as expressed emotion sub-scales and social support parameters in predicting variations in adjustment at both Time 1 and Time 2. Data was analysed using the Statistical Package for the Social Sciences (Norusis 1994).

RESULTS

1. Demographic Information

The thirty couples who took part in the study at Time 1 had a mean of 2.23 children (S.D. 1.19). The average age of each child was 31.49 years (S.D. 11.98 years). One third of couples had children living at home. Couples had been married for an average of 36.53 years (S.D. 12.01 years). Three patients (10%) and four spouses (13.3%) had been married on one previous occasion. Data from 27 of the patients indicated an average diastolic blood pressure of 68.07 (S.D. 7.33), taken on the same day as patients were interviewed in hospital for inclusion in the study. Peak creatinine phosphokinase (C.P.K.) levels on admission to the C.C.U. were available for only 9 patients (30%) at the time of data collection, with a mean of 561.89 (S.D. 624.24). At least one car was owned by the vast majority of couples (83.3%), with only five couples having no private means of transport. Seventeen couples (56.6%) owned at least one household pet. Twenty-three patients (76.6%) stated that they had finished their formal education on or before the age of 16. Six patients (20%) had left school at eighteen years of age, while only one patient from the sample had progressed to higher education.

Of the 27 G.P.'s who were contacted after second interviews to provide additional information, 19 (70%) returned their questionnaires. From this information (see Appendix 5) patients had attended their clinics as out-patients on an average of four occasions (S.D. = 2.43) between the two study interviews. No patient was felt to have made a poor physical recovery by their G.P., while 16 (84%) were felt to have made either a "moderate" or "very good" physical recovery.

2. Comparison of Adjustment and Expressed Emotion with Clinical Samples

Tables 1, 2 & 3 show the scores obtained from patients and spouses at both Time 1 and Time 2 for both patient adjustment and levels of perceived expressed emotion between couples, alongside scores obtained from clinical samples by the questionnaire authors (Dodds et al. 1994; Gerlsma & Hale (in press)). A description of these groups is given in Appendix 8.

From Table 1 it can be seen that anxiety and depression levels at both time intervals were significantly lower than the scores obtained by the clinical sample at Time 1 ($t = 4.41$, $df = 29$, 2-tailed $p < .005$) and Time 2 ($t = 6.10$, $df = 26$, 2-tailed $p < .005$), with higher scores indicating better adjustment. Patients also reported higher levels of self-esteem at both data points (Time 1: $t = 3.06$, $df = 29$, 2-tailed $p = .005$; Time 2: $t = 3.23$, $df = 26$, 2-tailed $p < .005$). Despite this, they reported lower levels of perceived self efficacy at Time 2 ($t = 2.44$, $df = 26$, 2-tailed $p < .05$) and a more internal attributional style for failure and external style for success at Time 1 ($t = 2.22$, $df = 29$, 2-tailed $p < .05$). Patients reported a significantly greater sense of external locus of control soon after their M.I. ($t = 3.92$, $df = 29$, 2-tailed $p < .005$), and later on in adjustment ($t = 5.19$, $df = 26$, 2-tailed $p < .002$), than the clinical sample. There were no significant differences at either time point for patients' attitudes towards disability or acceptance of disability in comparison with the clinical group ($p > .05$).

N.A.S.	TIME 1 (N=30)	TIME 2 (N=27)	CLINICAL SCORE (N=469)	TIME 1 (N=27)
ANXIETY- DEPRESSION	43.900** (3.652)	44.815** (3.282)	40.962	44.070 (3.600)
SELF-ESTEEM	35.630* (4.155)	35.704* (4.705)	32.778	35.630 (3.940)
ATTITUDES TOWARDS DISABILITY	24.704 (3.441)	24.444 (5.480)	24.490	24.700 (3.480)
LOCUS OF CONTROL	16.890** (1.663)	16.260** (1.767)	18.023	16.890* (1.530)
ACCEPTANCE OF DISABILITY	35.963 (4.122)	35.481 (5.191)	35.818	35.960 (4.020)
SELF-EFFICACY	31.111 (5.162)	29.926* (5.061)	32.305	31.110 (5.150)
ATTRIBUTIONAL STYLE	18.111* (3.662)	19.000 (3.076)	19.516	18.110 (3.820)

(* = $p < .05$; ** = $p < .005$)

Table 1. Comparison of adjustment variables with clinical sample and across time.

LEVEL OF EXPRESSED EMOTION SUBSCALE (PATIENT)	TIME 1 (S.D.) (N=30)	TIME 2 (S.D.) (N=27)	CLINICAL SAMPLE SCORE (N=26)	TIME 1 (S.D.) (N=27)
TOTAL EXPRESSED EMOTION	68.667 (17.500)	72.000 (22.861)	70.05	69.500 (17.80)
LACK OF EMOTIONAL SUPPORT	32.300 (9.879)	34.074 (12.517)	31.960	32.520 (10.150)
INTRUSIVENESS	15.833 (4.457)	16.741 (6.174)	16.180	16.040 (4.590)
IRRITABILITY	12.433 (4.040)	12.556 (4.335)	12.730	12.370 (4.230)
CRITICISM	8.100 (2.928)	8.630 (3.681)	9.180	8.110 (3.000)

(* = $p < .05$; ** = $p < .005$)

Table 2. Comparison of patient expressed emotion levels with clinical sample and across time.

Table 2 (above) shows a comparison of patient expressed emotion levels as perceived by the spouse with scores from the depressed sample of Gerlsma & Hale (in press). No significant differences with the clinical sample were observed at either Time 1 or Time 2 on either total expressed emotion or any of the subscales ($p > .05$).

LEVEL OF EXPRESSED EMOTION SUBSCALE (SPOUSE)	TIME 1 (S.D.) (N=30)	TIME 2 (S.D.) (N=27)	CLINICAL SAMPLE SCORE	TIME 1 (S.D.) (N=27)
TOTAL EXPRESSED EMOTION	57.233** (10.020)	59.778** (13.209)	80.450	56.430 (9.860)
LACK OF EMOTIONAL SUPPORT	24.367** (4.000)	25.370** (5.569)	34.550	24.330 (3.800)
INTRUSIVENESS	16.667 (4.587)	16.444 (4.619)	16.650	16.700 (4.660)
IRRITABILITY	9.133** (3.082)	10.222** (3.704)	19.650	9.000 (2.790)
CRITICISM	7.067** (2.227)	7.741* (2.917)	9.600	6.960 (2.170)

(* = $p < .05$; ** = $p < .005$)

Table 3. Comparison of spouse expressed emotion levels with clinical sample, and across time.

Table 3 (above) shows considerable differences between clinical sample values and levels of expressed emotion from spouses as perceived by the patient. Total levels were perceived to be significantly less than those perceived by depressed patients at both Time 1 ($t = 12.69$, $df = 29$, 2-tailed $p < .005$) and Time 2 ($t = 8.13$, $df = 26$, 2-tailed $p < .005$). This was also seen for perceived lack of emotional support, spouses giving significantly more support than that of the clinical sample at Time 1 ($t = 13.93$, $df = 29$, 2-tailed $p < .005$) and Time 2 ($t = 8.57$, $df = 26$, 2-tailed $p < .005$). Spouses also appeared to display significantly less irritability at Time 1 ($t = 18.69$, $df = 29$, 2-tailed $p < .005$) and Time 2 ($t = 13.23$, $df = 26$, 2-tailed $p < .005$), and to a lesser extent criticism at Time 1 ($t = 6.23$, $df = 29$, 2-tailed $p < .005$) and Time 2 ($t = 3.31$, $df = 26$, 2-tailed $p < .05$). No significant differences in levels of perceived intrusiveness on the spouses part in comparison to the clinical sample was observed ($p > .05$).

3. Changes in Adjustment and Expressed Emotion Levels Across the Study Period

While the mean values at Time 1 for adjustment and expressed emotion observed in the tables above represent data from the 30 couples who initially took part, the following analyses represent comparisons of longitudinal data from the 27 pairs who were followed up. Tables 1, 2 & 3 therefore also contain data for the mean levels of adjustment and expressed emotion at Time 1 for these pairs, in the right side column of each table. There were no significant differences between scores obtained for the group of thirty and the group of twenty-seven at Time 1 ($p > .05$).

From the obtained values in Table 1 it can be seen that there was little change in levels of adjustment during the recovery period, with the exception of locus of control. Patients showed a statistically significant decline in reported levels of internal locus of control from Time 1 to Time 2 ($t = 2.45$, $df = 26$, $p < .05$).

From Table 2 levels of expressed emotion in patients tended to increase over the recovery phase, but such increases were statistically non-significant for all aspects of expressed emotion, including total levels ($p > .05$).

There was also a tendency for spouse expressed emotion as perceived by patients to increase over time (with the exception of intrusiveness levels which declined slightly), as can be seen from Table 3. As with patient levels, however, these changes were non-significant ($p > .05$).

4. Comparison of Patient and Spouse Levels of Expressed Emotion over the Study Period

Considerable differences in levels of perceived expressed emotion between spouses and patients can be seen in Table 4 (below). In general, and with the exception of intrusiveness, spouses perceived their ill partners as displaying more expressed emotion than these patients did in their spouses. Using independent t-tests, patients were found to show significantly more overall expressed emotion at both Time 1 ($t = 3.11$, $df = 58$, $p < .005$) and Time 2 ($t = 2.41$, $df = 52$, $p < .05$). Within aspects of the concept, they also showed less emotional support towards their spouses, again at both Time 1 ($t = 4.08$, $df = 58$, $p < .005$) and Time 2 ($t = 3.30$, $df = 52$, $p < .05$).

LEVEL OF EXPRESSED EMOTION SUBSCALE	TIME 1		TIME 2	
	PATIENT	SPOUSE	PATIENT	SPOUSE
TOTAL EXPRESSED EMOTION	68.667** (17.499)	57.233 (10.020)	72.000* (22.861)	59.778 (13.209)
LACK OF EMOTIONAL SUPPORT	32.300** (9.879)	24.367 (4.004)	34.074* (12.517)	25.370 (5.569)
INTRUSIVENESS	15.833 (4.457)	16.667 (4.589)	16.741 (6.174)	16.444 (4.619)
IRRITABILITY	12.433 (4.040)	9.133 (3.082)	12.556 (4.335)	10.222 (3.704)
CRITICISM	8.100 (2.928)	7.067 (2.227)	8.630 (3.681)	7.741 (2.917)

(* = $p < .05$; ** = $p < .005$)

Table 4. Mean patient and spouse expressed emotion levels at Time 1 & Time 2

5. Changes in Levels of Social Support Received over the Study Period

Table 5 shows the mean number of discreet instrumental and expressed support incidents received by couples at both Time 1 and Time 2.

SOCIAL SUPPORT TYPE	TIME 1 (S.D.) (N=27)	TIME 2 (S.D.) (N=27)
TOTAL INSTRUMENTAL SUPPORT	2.630 (1.149)	2.556 (1.013)
INSTRUMENTAL SUPPORT FROM FAMILY	1.556 (1.251)	1.370 (.926)
INSTRUMENTAL SUPPORT FROM NON-FAMILY	1.185 (1.075)	1.185 (1.145)
TOTAL EXPRESSED SUPPORT	4.852 (1.610)	5.148 (1.512)
EXPRESSED SUPPORT FROM FAMILY	2.481 (1.762)	2.296 (1.728)
EXPRESSED SUPPORT FROM NON-FAMILY	2.407 (1.500)	2.852 (1.610)

(* = $p < .05$; ** = $p < .005$)

Table 5. Mean number of support contacts received by couples at Time 1 & Time 2

From Table 5 (above) levels of instrumental support appear to decline or remain static over the study period, while total expressed support and that expressed support given by non-family members increased slightly. However, these changes were small and non-significant ($p > .05$).

6. Analysis of Adjustment According to Demographic Categorical Variables

Patients were split into groups according to sex, car and pet ownership, and whether couples had a child living at home during the study period. An analysis of adjustment was made based on these variable groupings, using independent t-tests.

There were no significant differences between males and females on any adjustment variable at either time point, nor were there any such differences between those patients owning pets and those who did not ($p > .05$). Patients who owned cars ($n = 23$

at Time 2) accepted their disability in a less passive manner at the end of the study period than those who had no such transport ($t = 2.81$, $df = 25$, $p < .05$). Adjustment levels were not influenced significantly over time by the presence of children at home ($p > .05$).

7. Intercorrelation of Adjustment Variables

Table 6 (below) shows associations between adjustment variables at time 1 ($n = 30$). Most of the variables were significantly intercorrelated ($p < .05$ or better). Blank spaces indicate no significant correlation. The strongest associations appeared to be between acceptance of disability and anxiety/depression ($n = 30$, $p < .005$), attitudes towards disability and acceptance of disability ($n = 30$, $p < .005$), and the association of self efficacy with both attitudes ($n = 30$, $p < .005$) and acceptance ($n = 30$, $p < .005$). All associations were positive in direction, indicating that better adjustment in one domain was associated with better adjustment in another. Higher scores on the anxiety/depression subscale indicated *less* distress. Variable pairs showing no relationship with each other were anxiety/depression and locus of control, anxiety/depression and self-efficacy, and self-esteem and locus of control ($p > .05$).

	ANX/DEP	ACCEPT	ATTITUD	ATTRIB	LOCUS	SELF-EST	SELF-EFF
ANX/DEP	-	.720**	.429*	.490*		.592**	
ACCEPT	-	-	.775**	.489*	.513**	.667**	.675**
ATTITUD	-	-	-	.513**	.502**	.561**	.677**
ATTRIB	-	-	-	-	.431*	.345*	.407*
LOCUS	-	-	-	-	-		.378*
SELF-EST	-	-	-	-	-	-	.507**

(* = $p < .05$; ** = $p < .005$)

Table 6. Correlations between adjustment variables at Time 1 (r .)

	ANX/DEP	ACCEPT	ATTITUD	ATTRIB	LOCUS	SELF-EST	SELF-EFF
ANX/DEP	-	.520**	.642**			.624**	.504*
ACCEPT	-	-	.827**	.479*	.648**	.774**	.852**
ATTITUD	-	-	-	.584**	.575**	.839**	.715**
ATTRIB	-	-	-	-		.462*	.380*
LOCUS	-	-	-	-	-	.602**	.587**
SELF-EST	-	-	-	-	-	-	.726**

(* = $p < .05$; ** = $p < .005$)

Table 7. Correlations between adjustment variables at Time 2 (*r.*)

At Time 2 (see Table 7, above), most of the intercorrelations seen at Time 1 were similar or numerically strengthened. This included the positive associations between attitudes and acceptance of disability ($n = 27$, $p < .005$), between acceptance and self-esteem ($n = 27$, $p < .005$), acceptance and self-efficacy ($n = 27$, $p < .005$), attitudes and self-esteem ($n = 27$, $p < .005$) and attitudes and self-efficacy ($n = 27$, $p < .005$). There was also a close positive association between self-esteem and self-efficacy ($n = 27$, $p < .005$).

	ANX/DEP TIME 2	ACCEPT TIME 2	ATTITUD TIME 2	ATTRIB TIME 2	LOCUS TIME 2	SELF-EST TIME 2	SELF-EFF TIME 2
ANX/DEP TIME 1	.521**	.498*	.430*			.555**	.498*
ACCEPT TIME 1	.483*	.754**	.681**	.410*	.521**	.802**	.742**
ATTITUD TIME 1	.479**	.776**	.835**	.477*	.488*	.832**	.708**
ATTRIB TIME 1		.539**	.654**	.498*		.471*	.490*
LOCUS TIME 1		.492*	.525**		.681**	.488*	.501*
SELF-EST TIME 1	.443*	.452*	.519*			.558**	.606**
SELF-EFF TIME 1		.671**	.539**	.553**		.503*	.627**

(* = $p < .05$; ** = $p < .005$)

Table 8. Correlations between adjustment variables: Time 1 vs. Time 2 (*r.*)

Table 8 shows the inter-relationship of adjustment variables across time. All relationships were again positive. Not surprisingly, each variable at Time 1 correlates highly significantly with itself at Time 2. The strongest associations included those between acceptance of disability at Time 1 and self-esteem at Time 2 ($p<.005$), and attitudes towards disability at Time 1 and self-esteem at Time 2 ($p<.005$).

8. The Relationship between Demographics, Physical Health Factors, and Adjustment

Table 9 (below) shows the statistical significance of associations between a variety of demographic and health indicators at both points in time. Blank cells indicate no association between variables.

	<u>ANX/DEP</u> TIME		<u>ACCEPT</u> TIME		<u>ATTITUD</u> TIME		<u>ATTRIB</u> TIME		<u>LOCUS</u> TIME		<u>SELF-EST</u> TIME		<u>SELF-EFF</u> TIME	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
PATIENT AGE									-.439 *	-.428 *				
YEARS MARRIED				-.537 **		-.472 *	-.535 **	-.377 *		-.457 *	-.495 *	-.387 *		-.570 **
CHILD AGE				-.464 *			-.442 *	-.369 *						
EDUCAT. LEVEL	.375 *		.397 *	.400 *				.473 *						
SOCIAL CLASS				-.494 *		-.488 *	-.551 **	-.464 *		-.451 *				-.570 **
G.P. RATING									.590 *		.499 *			
CLINIC VISITS														
C.P.K. LEVEL														
DIASTOL. B.P.	-.516 *	-.548 **									-.390 *	-.442 *		

(* = $p<.05$; ** = $p<.005$)

Table 9. Relationship of demographics, health indices and G.P. ratings to adjustment at both Time 1 & Time 2 (r).

In general, demographic variables were seen to be associated with a variety of adjustment variables, with the notable exception of anxiety/depression. Fewer

associations were seen for information received from G.P.'s and records of C.P.K. levels at time of admission. The strength of significant associations at both time points between independent variables and adjustment variables tended to increase over time (with the exception of age and locus of control). The age of patients at the time of the study appeared negatively associated with locus of control at both Time 1 ($n = 30$, $p < .05$) and Time 2 ($n = 27$, $p < .05$). Younger patients felt more control over their own recovery and rehabilitation, and this was the case both on return home and later on in convalescence. How long couples had been married seemed to be significantly associated with a variety of adjustment variables. Newer marriages were associated with more successful psychological recovery. This was the case for less passive acceptance of disability at Time 2 ($n = 27$, $p < .005$), more adaptive attitudes towards disability at both time points ($n = 27$, $p < .005$ at Time 2), internal attributional style at Time 1 ($n = 30$, $p < .05$), internal locus of control at both time points ($p < .05$), greater self-esteem at Time 1 ($n = 30$, $p < .05$), and greater perceived self-efficacy at Time 2 ($n = 27$, $p < .005$). Patients with younger children seemed to do better in terms of not passively accepting disability and having adaptive attitudes towards such disability, but only after some time at home ($n = 27$, $p < .05$). This variable was also negatively associated with attributional style at Time 1 ($n = 30$, $p < .05$). Those who had been in formal education longer experienced fewer symptoms of anxiety and depression on immediate return home from hospital ($n = 30$, $p < .05$). A similar association was seen between education and acceptance of disability at both time points ($p < .05$), and attributional style at Time 1 only ($n = 30$, $p < .05$). Social class appeared strongly related to a number of adjustment variables. Those with a higher social class rating (e.g. social classes I & II) adjusted more successfully in terms of acceptance ($p < .05$), attitudes towards disability ($n = 27$, $p < .005$ at Time 2), attributional style and locus of control at Time 1 ($n = 30$, $p < .05$). Those patients in the higher social class brackets also perceived a greater sense of self efficacy after a longer period at home ($n = 27$, $p < .005$).

Information received from G.P.'s on physical recovery and clinic attendances did not appear to be particularly closely associated with adjustment as reported by patients. G.P.'s were asked to describe the type of information on which they had based their

rating of physical recovery. This included patient notes, exercise testing, and subjective opinion after having seen their patient directly. There was, however, some positive association between rating of recovery, locus of control and self esteem. Those with a greater internal locus of control over their illness and higher self esteem soon after their M.I. tended to be seen as having made a more successful physical recovery by their G.P. at the end of the study ($n = 19$, $p < .05$).

C.P.K. levels, which give a crude indication of the severity of M.I., were obtained from only 9 of the 30 patients who took part in the study, and were not associated with any aspect of adjustment at either time point. Unlike most of the demographic variables, diastolic blood pressure was strongly associated with psychological distress across the entire study period. Those with lower resting diastolic blood pressure reported fewer symptoms of anxiety and depression on return home ($n = 27$, $p < .05$), and also at follow-up ($n = 27$, $p < .005$). Lower diastolic blood pressure was also significantly associated with higher self-esteem at both points in time ($p < .05$).

9. The Relationship between Expressed Emotion and Adjustment.

Table 10 (below) shows associations between levels of expressed emotion and social support at Time 1, and adjustment variables at both time points.

TIME 1	ANX/DEP TIME		ACCEPT TIME		ATTITUD TIME		ATTRIB TIME		LOCUS TIME		SELF-EST TIME		SELF-EFF TIME	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
TOTAL PAT. E.E.			-.417 *			-.454 *	-.374 *			-.436 *		-.387 *		
PATIENT L.E.S.														
PATIENT INTRUS.														
PATIENT IRRIT.			-.438 *	-.503 *		-.574 **	-.519 **	-.499 *	-.364 *	-.450 *	-.422 *	-.483 *	-.467 *	-.499 *
PATIENT CRITIC.														
TOTAL SP. E.E.														
SPOUSE L.E.S.														
SPOUSE INTRUS.														
SPOUSE IRRIT.														
SPOUSE CRIT.														

(* = $p < .05$; ** = $p < .005$)

Table 10. Relationship of patient and spouse expressed emotion levels at Time 1 to adjustment variables at both Time 1 & Time 2 (r).

No aspect of spouse expressed emotion as perceived by the patient at Time 1 was significantly associated with any aspect of adjustment at either time point ($p > .05$). Only expressed emotion from the patient as perceived by the spouse at Time 1 appeared to be significant. For all significant associations, less perceived expressed emotion at Time 1 was related to better adjustment. Total patient expressed emotion was

negatively associated with acceptance of disability ($n = 30$, $p < .05$) and attributional style ($n = 30$, $p < .05$) at Time 1 only, and was associated with attitudes towards disability ($n = 27$, $p < .05$), locus of control ($n = 27$, $p < .05$) and self-esteem ($n = 27$, $p < .05$) later on in adjustment. In other words, patients who experienced few adverse immediate psychological effects as a result of M.I. were also the ones who displayed lower levels of expressed emotion in general on returning home. Patient irritability perceived by the spouse was negatively related to acceptance of disability across time ($n = 27$, $p < .05$), strongly associated with attitudes towards disability at Time 2 ($n = 27$, $p < .005$), with attributional style across time ($n = 27$, $p < .05$) and with locus of control, self-esteem and self-efficacy at both time points also ($p < .05$). This suggested a behavioural manifestation of poor psychological adjustment - those patients self-reporting poorer levels of adjustment in response to their M.I. were perceived as being more irritable in nature by their spouses. As with the significant relationships between some demographic variables and adjustment in Table 9, most associations between expressed emotion at Time 1 and adjustment seemed to increase in strength over the study period.

TIME 2	ANX/DEP TIME 1 2		ACCEPT TIME 1 2		ATTITUD TIME 1 2		ATTRIB TIME 1 2		LOCUS TIME 1 2		SELF-EST TIME 1 2		SELF-EFF TIME 1 2	
TOTAL PAT. E.E.			-.455 *											
PATIENT L.E.S.			-.412 *						-.422 *					
PATIENT INTRUS.														
PATIENT IRRIT.			-.460 *							-.435 *	-.414 *		-.415 *	
PATIENT CRITIC.														
TOTAL SP. E.E.			-.455 *	-.407 *	-.438 *	-.419 *	-.411 *		-.577 **		-.531 **			
SPOUSE L.E.S.			-.408 *			-.307 *	-.434 *		-.561 **		-.442 *			
SPOUSE INTRUS.					-.472 *				-.396 *		-.402 *	-.466 *	-.397 *	
SPOUSE IRRIT.					-.428 *				-.550 **		-.433 *			
SPOUSE CRITIC.														

(* = $p < .05$; ** = $p < .005$)

Table 11. Relationship of patient and spouse expressed emotion levels at Time 2 to adjustment variables at Time 1 & Time 2 (r).

Table 11 (above) suggests somewhat of a reversal of the trend in associations seen on Table 10. While patient irritability continued to be associated with adjustment (more irritability at Time 2 associated with poorer adjustment), the relationship appeared to be weaker and with fewer aspects of adjustment. Acceptance of disability at Time 1 was associated with total patient expressed emotion ($n = 27$, $p < .05$), lack of emotional support towards the spouse ($n = 27$, $p < .05$) and irritability displayed later on in adjustment. That is to say, those patients who reported being less resigned to their disability at the start of their recovery displayed less total expressed emotion, more emotional support of their spouses, and less irritability later on in adjustment. Patients giving more emotional support at Time 2 also felt significantly more in control of their own recovery at the same time ($n = 27$, $p < .05$).

Spouse expressed emotion as perceived by the patient further on in recovery appeared to be more closely associated with adjustment at both time points than that expressed by the patient. Total spouse expressed emotion at Time 2 was negatively associated with both patient acceptance of ($n = 27$, $p < .05$), and attitudes towards their disability ($n = 27$, $p < .05$) across the study period. This suggested that patients less willing to resign themselves to their disability, and those with more adaptive attitudes towards illness received less expressed emotion from their spouses later on in recovery. A similar pattern was seen with expressed emotion subscales. Less willingness to accept disability on the part of the patient on his or her immediate return home was associated with more spouse emotional support later on ($n = 27$, $p < .05$). This was also the case if patients showed a more internalised attributional style regarding success and external style for failure on return from hospital. Such emotional support at Time 2 was also associated with a more adaptive set of attitudes towards disability ($n = 27$, $p < .05$), an internal locus of control ($n = 27$, $p < .005$), and higher self esteem ($n = 27$, $p < .05$) at the same time point. Patients with more adaptive attitudes and greater self-efficacy on return home perceived significantly less intrusiveness from their wives later on at Time 2 ($n = 27$, $p < .05$). There was a subsequent association between such reduced intrusiveness and an internal locus of control, higher self-esteem, and greater self-efficacy in patients at Time 2 ($n = 27$, $p < .05$). There existed no relationship between criticism from either party and adjustment at both points in time.

10. The Relationship between Social Support and Adjustment.

Table 12 shows the correlations between both emotional and instrumental support from family and non-family at Time 1, and adjustment variables at both time points. Few associated existed. The amount or type of support that couples received in the time between the patient's return from home and first interview was related only minimally to adjustment. No aspect of social support was significantly associated with adjustment at both points in time.

For significant relationships, the more specific incidents of support received, the better the psychological adjustment. The total amount of instrumental support (tangible help) received by couples was related significantly to patient attitudes on return home ($p < .05$). The total emotional support (expressions of support) received by couples at first was associated with better patient self-efficacy later on ($p < .05$), and such support from family members was associated with a more adaptive attributional style initially ($p < .05$).

TIME 1	ANX/DEP TIME 1 2		ACCEPT TIME 1 2		ATTITUD TIME 1 2		ATTRIB TIME 1 2		LOCUS TIME 1 2		SELF-EST TIME 1 2		SELF-EFF TIME 1 2	
TOTAL INSTRUM SUPPORT					.373 *									
FAMILY INSTRUM SUPPORT														
N/FAM INSTRUM SUPPORT														
TOTAL EMOT. SUPPORT													.419 *	
FAMILY EMOT. SUPPORT							.491 *							
N/FAM EMOT. SUPPORT														

(* = $p < .05$; ** = $p < .005$)

Table 12. Relationship of family and non-family social support to adjustment variables at Time 1 & Time 2 (r).

Social support at Time 2 was even more weakly associated with adjustment. The only significant association existed between the emotional support received from non-family members, and patient attributional style at the same time point. This association barely reached significance ($n = 27$, $r = .386$, $p = .047$).

11. Summary of Relationships Between Variables.

The strongest relationships existed between adjustment variables, both at individual points in time and across time. A variety of demographic variables were associated with adjustment, including how long couples had been married, patient education level and social class. Patients' G.P.'s rating of recovery at Time 1 was also related significantly to some aspects of adjustment, as was the patients' diastolic blood pressure, a physical parameter. On immediate return home, only levels of expressed emotion in patients (especially their irritability) were related to adjustment at the same time or later on. This pattern reversed at Time 2, where all aspects of spouse expressed emotion were negatively associated with psychological adjustment, suggesting a link between initial patient adjustment and subsequent spouse behaviour. Very few associations between social support and adjustment were observed at either time point.

12. Multiple Regression Analyses.

Given that many independent variables were associated with adjustment concurrently, multiple regression analyses were performed on the data to ascertain their contribution towards the prediction of psychological adjustment. In the first instance, the ability of independent variables to predict outcome (i.e. adjustment at Time 2) was assessed. This was done by placing all those variables significantly correlated with adjustment at Time 2 into a regression equation (including adjustment variables themselves), and subsequently removing those not significantly contributing to the prediction of outcome. As the most powerful predictors of outcome were likely to be those contributing to the equation *across the study period*, only variables at Time 1 which were associated with psychological adjustment at Time 2 were added to the equations. In addition, the relative contribution of variables in predicting outcome was calculated by removing individual factors from the final equation to obtain a partial correlation coefficient. Results of this analysis are summarised in Tables 13-19.

PREDICTOR VARIABLE	ANXIETY/DEPRESSION			
	Beta	t	Partial r ²	p
ATTITUDES TO DISABILITY	.368	2.21	.127	<.05
DIASTOLIC B.P.	-.459	-2.76	.198	<.01

(Overall Multiple $r = .654$; adj. $r^2 = .376$; $F = 8.22$; $df\ 2, 22$; $p < .01$)

Table 13: Regression of Anxiety/Depression at Time 2 on predictor variables at Time 1

Attitudes towards disability on return home and diastolic blood pressure while recovering in hospital together contributed some 37.6% of the total variance in levels of anxiety and depression at the end of the study (adjusted r^2). From Table 13 (above), diastolic blood pressure contributed more to the variance in emotional distress (nearly 20%) than did the attitudes that the person had regarding illness. Recalling the direction of association (Table 9), lower blood pressure contributed to lower distress.

PREDICTOR VARIABLE	ACCEPTANCE OF DISABILITY			
	Beta	t	Partial r ²	p
ANXIETY/DEPRESSION	.273	2.06	.047	<.05
MEAN AGE OF CHILDREN	-.240	-2.09	.049	<.05
ATTITUDES TO DISABILITY	.646	4.93	.270	<.01
SELF ESTEEM	-.272	-1.78	.035	<.05
PATIENT IRRITABILITY	.281	-2.38	.063	<.05

(Overall Multiple $r = .876$; adj. $r^2 = .711$; $F = 13.81$; $df\ 5, 25$; $p < .01$)

Table 14. Regression of acceptance of disability at Time 2 on predictor variables at Time 1

A number of variables, including anxiety/depression, average age of offspring, attitudes towards disability, self-esteem and patient irritability at Time 1 all contributed substantially to the variance in acceptance of disability caused by M.I. (over 70%, adjusted r^2). While all of these variables taken together contributed significantly to the equation, from Table 14 it can be seen that most, with the exception of attitudes towards disability, contributed very little in real terms to the prediction of acceptance on their own. Attitudes, however, contributed some 27% of the variance in obtained scores.

PREDICTOR VARIABLE	ATTITUDES TOWARDS DISABILITY			
	Beta	t	Partial r^2	p
ATTITUDES TO DISABILITY	.726	7.58	.423	<.01
PATIENT IRRITABILITY	-.342	-3.57	.105	<.01

(Overall Multiple $r = .896$; adj. $r^2 = .786$; $F = 48.73$; $df\ 2,24$; $p < .01$)

Table 15. Regression of attitudes towards disability at Time 2 on predictor variables at Time 1

Two variables accounted for nearly 79% of the total variance in attitudes towards disability over the study period; attitudes concerning disability held by patients at the start of their recovery, and their levels of irritability at the same time. Of these two, attitudes at Time 1 (as with acceptance of disability) appeared to contribute the greatest to the prediction of attitudes later on. Those with more adaptive attitudes initially maintained these later on.

PREDICTOR VARIABLE	ATTRIBUTIONAL STYLE			
	Beta	t	Adjusted r^2	p
SELF EFFICACY	.553	3.32	.278	<.01

($F = 11.02$; $df\ 1, 25$)

Table 16. Regression of attributional style at Time 2 on self-efficacy at Time 1

From Table 16, only self-efficacy contributed significantly to attributional style, accounting for some 27% of the variance in scores (adjusted r^2), despite patient irritability being associated with attributions at Time 1 also. Here, a greater perception in being able to effect change initially contributed to the development of a more adaptive attributional style regarding success and failure.

PREDICTOR VARIABLE	LOCUS OF CONTROL			
	Beta	t	Partial r^2	p
LOCUS OF CONTROL	.618	4.48	.368	<.01
PATIENT EXPRESSED EMOTION	-0.315	-2.28	.095	<.05

(Overall Multiple $r = .748$; adj. $r^2 = .522$; $F = 15.20$; $df\ 2, 24$; $p < .01$)

Table 17. Regression of locus of control at Time 2 on predictor variables at Time 1

Both locus of control at Time 1 and total levels of patient expressed emotion accounted for over half of the variance in locus of control at study outcome. From partial r^2 calculations, locus of control at Time 1 contributed some 36.8% to variance in levels of perceived control at Time 2, with patient irritability contributing approximately 10% of such variance. Together, these variables accounted for just over 50% in total variance of locus of control (adjusted r^2).

PREDICTOR VARIABLE	SELF-ESTEEM			
	Beta	t	Partial r^2	p
DIASTOLIC B.P.	-.356	-3.16	.097	<.01
LOCUS OF CONTROL	.266	2.10	.043	<.05
ATTITUDES TO DISABILITY	.612	4.84	.227	<.01

(Overall Multiple $r = .892$; adj. $r^2 = .768$; $F = 27.30$; $df\ 3, 21$; $p < .01$)

Table 18. Regression of self-esteem at Time 2 on predictor variables at Time 1

A combination of locus of control, attitudes towards disability and diastolic blood pressure at Time 1 predicted some 76.8% of the total variance in levels of self-esteem among patients during the study. From Table 18 it can be seen from partial correlation analysis, that, as with other adjustment variables, attitudes to disability contributed most to the variance in scores.

PREDICTOR VARIABLE	SELF-EFFICACY			
	Beta	t	Partial r ²	p
ACCEPTANCE OF DISABILITY	.619	5.55	.353	<.01
SOCIAL CLASS	-.435	-3.90	.174	<.01

(Overall Multiple $r^2 = .851$; adj. $r^2 = .702$; $F = 31.63$; $df\ 2, 24$; $p < .01$)

Table 19. Regression of self-efficacy at Time 2 on predictor variables at Time 1

From Table 19 (above), some 70.1% of the variance in patient self-efficacy was accounted for by patients' acceptance of their disability and their social class. Again one aspect of adjustment (acceptance) predicted most of the variance in another, in this case self-efficacy. Unlike most independent variables in other equations, however, social class appeared to contribute considerably to variance in outcome (some 17% of total variance).

13. Prediction of Physical Recovery

A further multiple regression analysis was performed to assess the degree to which adjustment and other variables contributed towards physical recovery as assessed by the patient's G.P. at the end of the study (see Appendix 5). Despite social support being of little apparent value in predicting psychological recovery in this sample, it proved a highly significant predictor of physical recovery. G.P. rating of physical well-being was significantly associated with both family and non-family emotional support at Time 1 ($p < .05$), and also with years in education ($p < .05$). After other variables had

been partialled out of the regression equation, emotional support from family members alone contributed significantly to G.P. ratings of recovery, accounting for some 41% of the variance (adjusted $r^2 = .411$; Beta = .666; $t = 3.68$; $F = 13.55$; $df\ 1,17$; $p < .001$).

14. Prediction of Expressed Emotion at Time 2

In a previous analysis (see Table 11), it was found that adjustment variables at Time 1 seemed to be strongly associated with levels of certain aspects of expressed emotion later on in recovery. The direction of all correlations in this table indicated that early successful adjustment by the patient was associated with lower levels of their own expressed emotion, and (more especially) that of their spouses later on. As the first multiple regression equations identified expressed emotion as contributing in some part to outcome variance, a final series of regression analyses was performed to examine the relative contribution of variables to levels of such expressed emotion at Time 2. Given that many variables were intercorrelated with one another (as with variables predicting later adjustment), regression analyses allowed the unique contribution of Time 1 adjustment variables to variance in levels of expressed emotion to be ascertained. Only those aspects of expressed emotion at Time 2 which were significantly associated with adjustment at Time 1 were entered into the equations.

Patient acceptance of their disability at Time 1 predicted some 17.6% of the variance in levels of total patient expressed emotion later on in recovery (adjusted $r^2 = .176$; Beta = -.455; $t = -2.56$; $F = 6.54$; $df\ 1,25$; $p < .05$). This was the only variable of all those associated with expressed emotion in the patient to significantly contribute to variance in the regression equation. Acceptance also predicted to a similar degree how much emotional support patients gave to their spouses at Time 2 (adjusted $r^2 = .137$; Beta = -.412; $t = -2.26$; $F = 5.12$; $df\ 1, 25$; $p < .05$), and also contributed some 18% on its own to variance in patient irritability (adjusted $r^2 = .180$; Beta = -.460; $t = 2.59$; $F = 6.69$; $df = 1, 25$; $p < .05$) The attributional style of the patient on leaving hospital predicted 16.9% of the variance in total spouse expressed emotion at Time 2 (adjusted

$r^2 = .135$; Beta = $-.411$; $t = -2.25$; $F = 5.07$; $df = 1, 25$; $p < .05$) and 15.6% to the spouse's emotional support of the patient at Time 2 (adjusted $r^2 = .156$; Beta = $-.435$; $t = -2.41$; $F = 5.82$; $df = 1, 25$; $p < .05$) Finally, patient attitudes towards their disability on immediate return home contributed 22.3% to the variance in spouse intrusiveness at Time 2 (adjusted $r^2 = .223$; Beta = $-.472$; $t = -2.68$; $F = 7.16$; $df = 1, 25$; $p < .05$).

15. Summary of Results

Patients reported less psychological distress and higher self esteem at both points in time than those with a visual impairment (the clinical sample). They reported a greater sense of external locus of control, lower self-efficacy, more internal attribution of failure and greater external attribution for success than this comparison group. There were few changes in levels of adjustment over the study period. While there were few differences between patient levels of expressed emotion and those from a clinical sample of depressed patients, spouses were reported to display considerably less expressed emotion than partners of these patients, with the exception of perceived intrusiveness. Patients were perceived to have higher levels of expressed emotion than their spouses.

The strongest associations were seen between adjustment variables. Demographic variables such as age, education and social class were also closely associated with psychological adjustment, often at both time points, but generally not with distress. Patients' G.P. rating of physical recovery was also associated with certain aspects of psychological recovery, as were levels of resting diastolic blood pressure in hospital.

Perceived expressed emotion from spouses at Time 1 was unrelated to psychological adjustment later on. Adjustment at Time 1 was more closely associated with spouse expressed emotion later on in recovery. Patient expressed emotion as perceived by their spouse initially was, on the other hand, more closely associated with adjustment

at Time 1, especially with regard to irritability. Few association existed between adjustment and social support.

Only a few strong associations remained to significantly contribute to the variance in outcome regarding psychological recovery when placed in a regression equation for each aspect of psychological adjustment. Adjustment variables themselves tended to predict most of such variance, especially attitudes towards, and acceptance of, disability. Blood pressure, social class, and patient expressed emotion also contributed significantly to outcome. More emotional support from close family members predicted some of the variance in physical recovery as judged by the patients' G.P. Better adjustment early on in the rehabilitation process also predicted lowered levels of both patient and spouse conflict later on.

DISCUSSION

General Findings

That the overwhelming majority of patients were felt to have made a generally good physical recovery by G.P.s who returned questionnaires was encouraging, especially given the age of the sample. Good physical recovery did not, however, predict any aspect of psychological recovery. This finding supports evidence for the disparity between physical healing of the heart and the development of psychological disturbance (Wiklund et al. 1985).

Differences were found between the adjustment levels of patients and the visually impaired clients assessed with the original Nottingham Adjustment Scale (Dodds et al. 1994). M.I. patients showed significantly less psychological distress and had higher self-esteem than this sample. Obvious differences exist between these groups. M.I. patients may have shown less distress because of being past the acute stages of the illness, and the relative security that a return home may have brought (Erdman 1990; Lewin 1995). Most had been at home for a matter of only a few days before their first interview. These differences do not, however, explain why M.I. patients should have perceived themselves to have had a more external locus of control, lower self-efficacy later on in adjustment, and a less adaptive attributional style on return home than the visually-impaired sample. The comparison group were questioned prior to beginning a residential vocational course to equip themselves with the skills to find employment despite their visual impairments. They could be considered to have had a greater sense of control over their immediate futures than the M.I. patients, most of whom had retired and were not engaging in any formal program of structured rehabilitation. Perhaps because of this they also felt less efficacious regarding their own abilities than those with visual impairment. These findings may also have been an artefact of the relatively small size of the study sample ($n = 27$) in relation to the comparison group ($n = 469$).

Both the study group and the visually impaired sample were comparable on the two factors which were seen to predict variance in outcome, namely attitudes towards, and acceptance of, disability. As Dodds et al. (1991) note, attitudes towards disability can subsequently influence an individual's acceptance of acquired illness. Both aspects were highly correlated with one another across time in the study group. These attitudes are often formed solely on the basis of social stereotypes, especially if the individual has not experienced illness beforehand. This was the case for both the study sample (experiencing a first M.I.) and the visually impaired clients. Both sets of participants may therefore have developed their disabilities within the context of such attitudes, hence the similarities in scores.

Patients reported their spouses as exhibiting significantly lower levels of most aspects of expressed emotion at both time points when compared to a clinical group which was estimated to be younger than the spouses in the sample (mean age = 42 years). The young couples in the clinical group may have experienced more stress in dealing with the consequences of depression in someone they had not known for long (mean duration of relationship = 9 years), than spouses married for an average of over 36 years did with their partners. Older couples may deal with such events using well-practised routines, especially when the event is expected, and more "on-schedule" in terms of life stage (Coyne et al. 1990; Coyne & Smith 1991). That spouses may have displayed less of certain aspects of expressed emotion may also have reflected the "protective buffering" style of coping seen in the Michigan Family Heart Study (Coyne & Smith 1991), where spouses hid their feelings and gave in to arguments with the patient. Such differences may also be explained by an unwillingness on the patients' part to admit to any negative behaviours from their spouse, on whom they may have had to rely greatly since returning home. Patients did, however, report higher levels of intrusiveness in their spouses, which reached comparability with the clinical sample. This may simply have been a fair reflection of their spouses' increased involvement in their lives, especially given that many of the items relating to intrusiveness were ambiguous. The items "Has to know everything about me" and "often checks up on me to see what I'm doing" (see Appendix 3, page) were often seen to be interpreted in

a positive light by patients who may naturally have developed a very close relationship over a long period with their spouse. This may have elevated scores artificially, hence the similarities with spouses and partners in the clinical comparison group. Indeed, similarities in scores were also seen between patient levels of expressed emotion and the comparison group of depressed patients.

Spouses perceived more overall expressed emotion and less emotional support from their partners at both points in time. This finding may reflect either high levels of stress caused by the challenges faced by the patient during recovery, or pre-morbid behaviour patterns which may have pre-disposed the patient to M.I. in the first place (i.e. Type A behaviour). Secondly, it may be a reflection of the burden placed on the spouses in caring for their partners, who give over-estimations of negative behaviours as a result. Finally, these findings may give an indication that in measuring levels of expressed emotion only in the spouse or relative (as many studies of expressed emotion have), one fails to pick up relevant information regarding patient behaviour.

Patients who had access to private transport were less willing to accept passive resignation regarding their illness than those who did not. Car ownership may afford patients the opportunity of accepting their illness in a more adaptive fashion by getting them out of the house, perhaps to engage in social contact and previously enjoyed pastimes. Since acceptance was closely associated with, and indeed predicted, self-esteem and psychological distress, such increased activity may also have had other benefits regarding psychological adjustment which owning a car provided. The fact that patient self-efficacy was predicted to a large extent by acceptance, and also by social class, of which car-ownership is an indicator (Davey Smith 1990), may be important in this context.

The finding that pet ownership was not influential in distinguishing those who recovered better than others psychologically seems to conflict with the findings of Friedman & Thomas (1995), who found such ownership to be predictive of survival in a large sample ($n = 424$) of M.I. patients. Although it is perhaps unfair to compare these findings given the different outcome measures (and sample sizes), it has

previously been seen how psychological morbidity can influence subsequent health-promoting behaviours which may then have a bearing on survival (Stern et al. 1976; Smith et al. 1984; Erdman 1990). One possible reason for pet ownership being less influential in this sample may be that couples gained more from the support that they received from each other after a long period of time together than any non-human form of support.

Hypotheses

1. The first hypothesis stated that hostility and criticism on the part of the spouse would predict levels of patient self-efficacy over the study period, on the basis of findings by Coyne & Smith (1991). No association existed between any aspect of spouse expressed emotion at Time 1 and any aspect of patient adjustment at Time 2, including self-efficacy. Spouse expressed emotion was not predictive of psychological outcome. This hypothesis can, therefore, be rejected for this sample. The current study did not incorporate a measure of spouse hostility, and the role of this aspect of expressed emotion may still be important in patient outcome given previous findings (Fiske et al. 1991). As spouse levels of emotional support also did not predict outcome, it might be speculated that hostility would be unlikely to play a part in this sample either. Many items from this category of expressed emotion resembled hostility, such as "Accuses me of exaggerating when I say I'm unwell" and "Often accuses me of making things up when I'm not feeling well".

Secondly, this hypothesis stated that patients' self-efficacy would lower over the course of the study, and that self-efficacy would be associated with psychological distress. Levels of self-efficacy over time for this sample did not change significantly. This hypothesis was made on the basis of the effects of spouse expressed emotion. Given that spouse behaviour at Time 1 did not contribute to outcome variance, it is perhaps not surprising that self-efficacy was seen to remain relatively stable over the study period. What was significant, as hypothesised, was the relationship between self-efficacy and psychological distress (anxiety and depression). This was the case both at

Time 2, and across time, with distress at Time 1 being associated with self-efficacy later on. A perception of being capable of effecting change in one's circumstances was important for the psychological well-being of this sample, as it was for the well-being of the visually-impaired clients mentioned earlier.

Finally, it was stated that patient self-efficacy would be associated with patient expressed emotion, as a behavioural consequence of lowered self-efficacy. This hypothesis was again supported to some degree by the finding of a significant correlation across time between self-efficacy and levels of patient irritability. Low levels of self-efficacy regarding illness were associated with higher levels of irritability initially and later on in recovery.

These findings conflict with the strong link between spouse behaviours and patient self-efficacy seen in the Michigan Family Heart Study (Coyne et al 1990; Coyne & Smith 1991). The sample under study was, however, significantly older than the sample used by Coyne et al (1990, $t = 3.60$, $df = 29$, 2-tailed $p = .001$), was smaller in size, and was interviewed at a much earlier period in recovery than those in the Michigan study, who were seen on average some 5.95 months after hospital discharge. The latter subjects may have had more time to develop some of the difficulties in adjusting to illness discussed previously, such as the homecoming depression described by Wiklund et al (1985), and also the hostility and criticism seen in spouses by Fiske et al. (1991).

Lowering of self-efficacy, for whatever reason, was clearly associated with psychological distress, and therefore its role in adjustment remains important, especially given the findings of a link between self-efficacy and subsequent physical activity by Taylor et al (1985).

The fact that self-efficacy was associated with an increase in irritability over time may help explain the comments by Erdman (1990) and findings of Mayou et al. (1978) that irritability is often found in M.I. patients soon after the acute phase. It suggests that the limitations imposed by the illness may be difficult to accept for many, who display

annoyance as a consequence of not feeling that they are capable of effecting changes in their circumstances on returning home. The “linking” role of acceptance is supported by its contribution to the prediction of self-efficacy levels in this sample.

2. The second hypothesis stated that over-involvement on the part of the spouse in the care of their recovering partner may be beneficial. Some evidence suggests overprotection from a spouse may be a natural and necessary occurrence, especially in the first few days after return home from hospital, when the patient may feel especially vulnerable and dependent upon others (Fiske et al. 1991). Measuring intrusiveness as a form of over-involvement, no evidence could be found from the current sample for a beneficial effect of such a behaviour on patient psychological recovery. No association was seen between spouse intrusiveness and patient adjustment across time. Only when spouse intrusiveness was observed at Time 2 did such a behaviour appear to have an effect on the patient. This effect was always a negative one. Both locus of control and self-efficacy were associated with intrusiveness, suggesting that over-involvement may take away a patient’s sense of being able to control their recovery and feel able within themselves to effect change. Intrusiveness was shown to be associated with poorer recovery later on. The findings support other studies (Stern et al. 1977; Smith et al 1984), which showed the negative effects of overprotection. While this finding provides no evidence for the hypothesis made, it provides no direct evidence against the findings of Fiske et al (1991) either, as the negative relationship was established later on in recovery. Overprotection may not necessarily detrimental to mental health in M.I. patients soon after hospitalisation, as no association was seen at Time 1, or across time. A neutral effect of intrusiveness on short-term psychological recovery may be suggested from these findings.

3. The third hypothesis stated that the aspects of adjustment would be associated with one another. Many of these constructs seemed to be implicated by several studies (e.g. Lloyd & Cawley 1982; Taylor et al. 1985; Erdman 1990; Coyne et al. 1990; Bar-On et

al. 1994). The study provided strong evidence for the hypothesis, suggesting not only associations between variables, but prediction of certain variables by others. In the prediction of outcome, adjustment variables were involved (most often with other variables) in predicting all aspects of psychological outcome, across time and at Time 1 and Time 2. As psychological distress was also predicted by another cognitive adjustment construct, it may no longer be tenable to see such distress in isolation to other cognitive aspects of adjustment, as the focus on such distress in much previous research seems to do. These findings point towards a more inclusive model of psychological adjustment in M.I., and indicate that researchers should be looking at how M.I. patients' beliefs regarding their illness, themselves, and their efficaciousness affect emotional and physical recovery. The finding that having negative attitudes towards heart disease in the first place can predict subsequent emotional distress, acceptance of a sick-role with associated illness behaviours, and lower self-esteem (itself associated with anxiety and depression over time) surely provides sufficient enough evidence for a change in conceptualisation. Ross et al. (1990) have noted that emotional reactions often come about through the perceptions individuals have of themselves. It has already been seen from the health psychology literature how constructs such as locus of control, attributional style and self-efficacy can influence health-promoting behaviour when considered as part of larger models of behaviour change. Given that some of these constructs were also related to physical recovery as perceived by G.P.'s (those with internal loci of control and higher self-esteem initially recovered well physically), patient cognitions may also be important in determining changes in behaviour and better physical health.

4. The fourth hypothesis stated that perceived levels of expressed emotion would increase over the study period, as the pressures of changes in lifestyle, social roles and tasks of rehabilitation mounted. While most aspects of expressed emotion increased, these were not significant, and several possible explanations might be given for this finding. Firstly, the sample was relatively old, and it might be hypothesised that age had given couples more experience in dealing with major life events with relative success. These well-established relationships may have allowed the development of

successful coping methods to deal with life crises such as acute illness, producing lower levels of expressed emotion and the fewer changes over time. The fact that patients showed relatively little psychological distress, and little change in psychological adjustment over the study period may provide evidence for this suggestion. Ross et al. (1990) note that high quality marriages give couples better physical and mental health than those who remain unmarried. It may be that the length of marriage in the current sample is suggestive of high quality relationships and well-established routines which do not require detailed discussion between partners. The Pilot Study of the Michigan Heart Study (Coyne et al. 1990), which involved focus groups of couples who had experienced an M.I., noted that older couples fell back on routine ways of dealing with the changes which illness imposed. The fact that better adjustment predicted lower levels of spouse expressed emotion may provide further evidence for this explanation.

Secondly, Pleck (1983) and Ross et al. (1990) note that the presence of children within the family is often detrimental to marital satisfaction and the couple's well-being, due to the economic and social demands imposed. Most of the sample did not have to deal with such a burden on a full time basis (no couple had very young children to look after), and may have been able to deal with their relationship in the context of the illness more successfully as a result. Thirdly, Coyne & Smith (1991) cite evidence for more distress in younger M.I. patients, and consider that this may be due to the disruption of child rearing and unemployment caused by the illness. The occurrence of M.I. in the present sample may have been more predictable in terms of life stage and less unexpected as a result.

Finally, the fact that expressed emotion was measured *as perceived by each partner* may be significant. Patients perceived their spouses as displaying significantly less expressed emotion in general than the comparison group, and there was no significant increase in these levels over time. As has been suggested, patients may have felt unable to give an accurate account of their partner's negative behaviour given the extra practical help they are likely to have received after return from hospital.

5. The penultimate hypothesis stated that couples would receive less social support contacts from those outside the immediate family over the course of the study period due to being off work. Study findings did not support this hypothesis. No significant changes in either instrumental or expressed emotional support from extra-familial contacts was seen across the time points. This can perhaps be best explained by the age of the sample. Most patients had retired, and therefore the experience of M.I. is not likely to have had any significant effect on support from extended family and friends. This sample was not comparable to the unemployed participants studied by Jackson (1988). Many couples reported informally that these types of contact had changed not in frequency, but in how they were made. Instead of being visited, relatives and friends visited the patient at his or her home, thus maintaining support of both kinds. This reflected similar findings by Mayou et al. (1978) who also observed stability in levels of support in their sample. Older patients in the study may also have had more established supportive links with family and friends which could be more readily relied upon in times of crisis, and have relatives who may have been involved in their general care on a routine basis well before the M.I. As has been suggested elsewhere, older couples may use established routines in times of crisis (Coyne et al. 1990). This may extend to the availability of social support, where established contacts lend added support during crises.

Secondly, the hypothesis was made that reduced support of either type from immediate family would predict better adjustment in patients. This was based on research by Coyne & DeLongis (1986), who noted that reduced social support from family members may be a reflection of some individuals trying to remove themselves from difficult relationships, perhaps such as those with higher levels of expressed emotion. The study failed to provide any evidence for this hypothesis. Social support as measured here proved to have a very weak link with adjustment variables. While levels of total expressed support on return home was significantly associated with higher self-efficacy later on, social support in general did not contribute to the variation in adjustment when other variables were taken into account. These findings may be explained in a number of ways. Firstly, this hypothesis was based on the assumption of

some patients having poor relations with their spouse and immediate family. The low levels of expressed emotion from the spouse, and the consistent support received over time argues against this supposition for the sample. Indeed, the high levels of *patient* expressed emotion (comparable to a clinical sample) might have more readily predicted spouses as attempting to extricate *themselves* from the relationship, rather than the other way around! Secondly, some evidence suggests that older people tend to report more satisfaction with the support they receive (Lam & Power 1991). While the current study did not account for support quality, this sample's network may have provided adequate overall support for the patient to recover. Finally, the theory espoused by Coyne et al. (1990) that older couples deal more successfully with problems, may again help explain the lack of evidence for the hypothesis. Why should patients using established and effective routines with their spouses want to extricate themselves from such routines?

What still remains uncertain is why there was no positive link between support and better psychological adjustment. The wealth of literature on social support and its effects upon health suggest a positive role for support in mental health either directly or through buffering the effects of stress (Champion & Goodall 1994). One possible explanation may be that older couples with their established routines of coping with life are less influenced psychologically by the support they receive. While such support may not be in any way detrimental, it may be the relationship the couple have that is more important in determining recovery. Evidence for this comes for the greater role of spouse and patient expressed emotion in predicting outcome. These findings may also reflect the nature of the items used in the questionnaire on social support (Supportive Behaviours Checklist, Jackson 1988), some of which were not appropriate to the patient sample (see Study Limitations, below).

6. The final hypothesis stated that psychosocial variables would predict more of the variance in adjustment than physical variables such as C.P.K. levels and diastolic blood pressure. Evidence suggests that psychological distress is not predicted by the severity of infarct (Dellipiani et al. 1976; Lewin 1995). The study findings provide some

surprising evidence against this hypothesis, and further evidence to suggest that adjustment variables themselves are better predictors of other adjustment variables than either physical or social factors. Adjustment variables predicted all aspects of psychological outcome to some degree. Higher blood pressure significantly predicted higher distress and lower self-worth later on. While C.P.K levels were not predictive of outcome, this analysis may not be reliable given the limited amount of data for this variable. For older patients, such as those in the current sample, physical variables such as blood pressure and beliefs regarding illness may be more predictive of outcome than social and interpersonal factors. The studies by Krantz & Raisen (1988) and Keys et al. (1971), which showed a link between blood pressure, reactivity to stressful situations and heart disease development, may be particularly relevant for the present sample. It may be that blood pressure is more predictive of heart disease and psychological recovery in general with older patients, and gives rise to greater reactivity to environmental stimuli perceived as stressful. The negative attitudes towards disability which also predicted outcome might add to any over-reaction during physical recovery, through an inability to accept a temporary sick role by some. This might lead to increases in heart-rate and psychological distress in those who may already be anxious about innocuous physiological symptoms (Lewin 1995). Only further research into the role of intra-psychic factors in reactivity might provide evidence for this tentative hypothesis.

Several demographic and social factors did, however, play some role in the prediction of psychological outcome. How irritable patients were according to their spouses on return home predicted subsequent acceptance of disability, and also attitudes towards disability. That irritable patients adjusted less well psychologically might again suggest a link with reactivity and blood pressure. Those with greater physiological reactivity may show behavioural manifestations such as irritability towards family members. The finding of a role for patient irritability in affecting cognitions which have an effect on adjustment may be significant, given that both Erdman (1990) and Mayou et al. (1978) noted M.I. patients to display irritability soon after the acute phase. This finding suggests need for interventions which focus on the aetiology of irritability and ways of dealing with it early in the recovery phase (such as relaxation, anger management,

information provision and cognitive therapy). Such interventions clearly point to the use of more psychosocially-based rehabilitation programs. While purely physically-based programs may reduce the risk of re-infarction, they do little to effect change on a psychological level (Johnston 1997). Patients' total levels of expressed emotion towards their spouse also contributed to levels of perceived control regarding the illness. Frustrations experienced as a result of the M.I. may contribute towards seeing the outcome of the illness as beyond the control of the individual, especially if such frustrations are not dealt with at an early stage. The fact that patients had high levels of expressed emotion in comparison to their spouses may suggest that such frustration manifests itself not necessarily as anxiety and depression, but as behaviours such as irritability towards other family members, especially the spouse. Finally, having younger children also predicted more adaptive acceptance of illness. This conflicts with the finding of Mayou et al. (1978) who found that younger children were a source of conflict in families of recovering M.I. patients. Few of the children belonging to the couples in the sample lived at home permanently, reflecting the age of the sample. These younger children may not, therefore have cause as much conflict. Instead, they appear to have contributed to the psychological well-being of the patient, perhaps also as a result of being older than those causing conflict in the Mayou et al. (1978) study. This study also found that older children were more supportive of their parents.

That patient irritability and expressed emotion in general contributed to some aspects of psychological recovery may also hint at the role of Type A behaviour pattern in contributing to outcome. Given that aspects of expressed emotion such as irritability and criticism may parallel some features of Type A behaviour, it could be suggested that the expressed emotion seen in patients after M.I. is a continuation of pre-morbid patterns of behaviour. Kaufman et al. (1985) noted that an M.I. may be perceived by those with Type A as a threat to their self-esteem and locus of control. This may have occurred in the current sample, given the contribution of expressed emotion to locus of control, and the contribution of locus of control to self-esteem in turn. Rehabilitation packages may, therefore, need to look at changing certain aspects of Type A behaviour if successful psychological recovery is to take place.

Social class contributed (along with acceptance) to levels of self-efficacy. It had previously been shown that those of lower socio-economic status were often more prone to factors which can contribute to the development of heart disease, such as chronic stress, unemployment, and high blood pressure (Brenner 1979; Krantz & Raisen 1988; Davey Smith et al. 1990). It may be important to note when planning rehabilitation programs that more disadvantaged patients may come to see themselves as being unable to effect change in their own lives after M.I. This cognitive factor may need to be addressed initially if any program is to be a success in the longer term in returning such patients to full physical and psychological health. It may also be the case that given the circumstances in which such disadvantaged patients find themselves, such perceptions might be genuine and not amenable to change via traditional cognitive therapeutic means.

Additional Findings and Explanations

Better adjustment early on predicted more positive behaviour at a later stage. Patient acceptance and attitudes predicted levels of patient expressed emotion in general, and also levels of overall expressed emotion, emotional support, and intrusiveness in their spouses later on. While the fact that patient behaviour was more positive with better psychological adjustment was not entirely surprising, the more positive behaviour from the spouse is noteworthy. While the Framingham Heart Study (Haynes et al. 1983; Eaker et al. 1983), showed that spouse behaviour could influence the subsequent development of heart disease in the patient, the current study provided evidence that after M.I., psychological recovery in patients could predict subsequent behaviour in spouses. Given that spouse expressed emotion was also found to be related to (if not *predictive of*) later adjustment in turn, certain aspects of psychological outcome early on may be vital in predicting later adjustment.

Dodds et al. (1991) suggest that acceptance of disability is useful in the prediction of outcome following formal rehabilitation, and can also be associated with concepts such as self-esteem. In this sample, acceptance was predictive of other constructs such as

self-efficacy. Given that adaptive acceptance meant challenging the illness by refusing to resign oneself to passivity and low mood, M.I. patients in this sample benefited in turn by believing themselves to be more able to change their own circumstances later on. Not only did adaptive acceptance of illness predict changes in cognitions related to health, but it also influenced the interaction between spouse and patient. This may reflect findings by Agarwal et al. (1985) who noted the beneficial effects (in terms of mood) of positive life orientation.

Attitudes towards disability played a substantial role in the prediction of outcome, in terms of psychological recovery and behaviour change in the spouse. This suggests that social stereotypes of what it means to be ill or disabled may play an especially important role in determining recovery and the behaviour of significant others in those patients who may have suffered little or no poor health, and for whom such stereotypes become relevant at times of illness. Those patients with negative attitudes towards illness may find adjustment difficult when ill. Results suggest that such difficulty arising from negative attitudes contributes towards psychological distress. What is less clear is whether such distress is also mediated by spouse intrusiveness, which attitudes were also shown to predict. Erdman (1990) notes that some patients returning home may develop certain attitudes and beliefs concerning their M.I. which can influence the development of invalidism and other illness behaviours. It may be that patients with negative attitudes went on to develop such behaviours through spouse intrusiveness, developing more psychological distress and lowered self-esteem as a consequence, but this remains speculative.

That no aspect of initial spouse expressed emotion was associated with subsequent psychological recovery may have been due to a variety of reasons. Firstly, the sample size of the current study may not have provided sufficient power to show the kind of effects observed by Coyne & Smith (1991). Secondly, both studies employed different measures of self-efficacy and spouse behaviour, and this may have affected any comparison. Lastly, the effects of spouse protective buffering on patient self-efficacy in the Michigan Family Heart Study was observed only in those marriages rated as poor in quality. The fact that couples in the present study had been married for a long time,

and showed comparatively little expressed emotion towards each other might indicate that the samples were not comparable.

Results suggested an important role for support in contributing to physical health after M.I. Twenty-one doctors of the original 30 patients rated their perception of how well they thought their patient had recovered physically since their M.I. Over two-thirds of the variance in these ratings was found to be predicted solely on the basis of the amount of expressed support received from close family members, even when other related variables were accounted for. Expressed support may help to re-assure the patient on return home, reducing anxiety, and have a beneficial effect on the heart (Bundy 1994). This may also explain the low levels of psychological distress in the sample. Expressed support may also mitigate against the effects of irritability, as such support might be incompatible with patient expressed emotion. Support from others, however, still needs to be perceived as helpful (Dakof & Shelley 1990). Items from the Supportive Behaviours Checklist (Jackson 1988) focus on information provision, unthreatening offers of help, positive reinforcement, and offers from others to talk about worries. These types of support may have been less threatening to patients, who perceived them as positive. Such reinforcement and information provision from loved-ones may also have encouraged adherence to any informal rehabilitation, promoting better physical health. Support of this type contrasts with the over-involved intrusiveness which was associated with poorer adjustment later on in recovery.

Finally, the fact that anxiety and depression early on did not predict such distress later on supports the evidence provided by Mayou et al. (1978) who found a similar relationship in their sample. Little change in levels of social contact seen in the current sample was also reflected in the findings of Mayou et al. (1978). Additionally, the stability of self-esteem over the course of the study period contradicts the supposition made by Sarafino (1990) who states that M.I. is akin to grief, with losses to self-esteem.

Study Limitations

The small sample size may have affected the legitimacy of some statistical analyses, especially given that analyses of Time 2 data involved only 27 couples. As most of the sample was composed of male patients, less could be said about how the behaviour of male spouses affects the psychological recovery in female patients than might have been hoped for. Much of the literature focuses on how female partners affect recovery in males, perhaps due to the differences in prevalence of heart disease among males and females.

The Nottingham Adjustment Scale (Dodds et al. 1991) contained a measure of anxiety and depression which tended to tap symptoms at the more severe end of psychological distress, including suicidal tendencies. As no patient reported such severe levels of distress and low mood, this particular aspect of the scale may not have been as sensitive in picking up milder levels of anxiety and depression. The importance of floor effects regarding scores should therefore be taken into consideration. These questions did not relate specifically to aspects of the M.I. recovery process which may have given rise to distress, such as awareness of body symptoms, pain and fatigue (Lewin 1995). The subscales relating to locus of control and attributional style did not relate specifically to myocardial infarction, and therefore may not have been as sensitive or as relevant as they could have been. Less than 30% of the variance in attributional style scores were explained by the study variables. The study did not employ the LISREL techniques used by Ferguson et al (1996) to create a model of adjustment. Such an analysis may not have been viable given the small sample size. Future studies of M.I. recovery using this measure and a larger sample size may be able to construct such an informative model of adjustment for this population.

An important consideration may be the possible differences between the concepts of overprotection and intrusiveness. In the current sample, intrusiveness was characterised by active and physical invasion into the private space of the patient by the

spouse. This may have been different to the overprotectiveness described by Coyne & Fiske (1992), which seemed to reflect high levels of assistance and help towards the vulnerable patient. Such protectiveness, at least in moderation, was shown to be beneficial, but intrusiveness, at any level may have been perceived as negative, and therefore difficult to compare empirically as it was. The study was, therefore, constrained somewhat by the need to use a short, unobtrusive measure of expressed emotion which tapped a variable conceptually different to those used in other studies.

Use of the Level of Expressed Emotion scale (Gerlsma et al. 1992) meant that biases in perception of both patients and spouses need to be taken into consideration when interpreting the results. While this provided useful additional information and potential for further hypothesis generation, the levels obtained may not have provided a true reflection of what was actually occurring between couples. This may explain the reason for why spouse expressed emotion appeared largely unrelated to subsequent patient adjustment. It may be useful to replicate this study using a measure of actual expressed emotion (rather than perceived levels), such as the Camberwell Family Interview (Vaughn & Leff 1976; Kazarian et al. 1990; Hooley & Richters 1991). Additionally, many of the items in the Level of Expressed Emotion scale refer to how individuals feel they are treated by their partner *when ill*. Such questions may have been difficult for spouses to answer objectively, given that they had just experienced acute illness in their spouse which presumably was a focus of attention for them at that time.

One further consideration regarding levels of expressed emotion in patients and spouses and its relationship with adjustment may be that it should be seen more as a dependent variable rather than an independent one. Given that levels were seen to rise over the study period, and that spouse expressed emotion was related to adjustment only later on in recovery might suggest that such emotion represents a reaction to the MI, and changes should be seen as an important aspect of the recovery process themselves.

Two items in the Supportive Behaviours Checklist of Jackson (1988) were not relevant to the client sample used in this study. As the measure was designed for unemployed

clients, these asked about financial and material aid offered by others, and may have been inappropriate for this older sample, who in general were not experiencing any financial hardship at the time of the study. The range of questions which tapped instrumental support from others was therefore restricted, and this may account for the lack of contribution of instrumental support in predicting outcome.

The gap between initial and follow-up interviews, while averaging approximately ten weeks (mean 68.37 days), showed considerable variation across the sample, due to the time constraints placed upon the study (S.D. 14.41 days). The maximum gap between interviews was just over fourteen weeks (102 days), while the minimum gap was just over four weeks (32 days). Such variation may have influenced the results by allowing some participants more time to come to terms with their illness.

The present study was designed to investigate the relationship between couples in the most naturalistic manner, without any experimental manipulation. Certain variables which were not controlled for, however, should be mentioned. No control was made for rehabilitation programs (either physical or psychosocial) that might have had a bearing on psychological recovery. It should be noted, however, that few of the study participants seemed to be engaged in any such program when asked on an informal basis. Some had been provided with written information regarding their illness and suggested changes of lifestyle to aid recovery. This lack of formal rehabilitation may have reflected the age of the sample and an unwillingness of older patients to take up more formal programs. As diastolic blood pressure predicted some variance in outcome, better control for M.I. severity may have provided additional evidence on the contribution of physical well-being to psychological recovery in older patients. While some information on C.P.K. levels was provided, it may have proved more useful to use more accurate measures of infarct severity. The study did not control for the effects of coping styles and medication on outcome, nor did it control for pre-morbid levels of marital satisfaction which may have been difficult to gauge accurately (Lewin 1995).

Conclusion

This study confirmed many previous findings from other studies on psychological recovery, provided no evidence to support others (many of which were speculative and unsupported in the first place), and also provided new information regarding the link between the experience of M.I., patient cognitions, and the effect of those cognitions upon both patient and spouse behaviour. That an ability to psychologically adapt to M.I. early on has profound effects on the relationship between couples later on suggests the need for early intervention for those experiencing problems with certain aspects of adjustment. Important aspects appear to be cognitions reflected in such concepts as attitudes towards, and acceptance of disability, rather than psychological distress which has tended to be the traditional focus of many studies. This would suggest that formal rehabilitation programs need to address the beliefs and attitudes that patients have regarding their illness, and also their belief in being able to change their lifestyles to improve health. Such attitudes may form the core of a model of M.I. adjustment in older adults, linking self-worth and the perception of being able to effect change as others have done for adjustment in visual impairment using attributional style. The formulation of such a model would only be possible using more complex statistical techniques. The study further suggests that those from more disadvantaged backgrounds may need additional support if such perceptions are to be changed, and that the sources of disadvantage should themselves be addressed. That a variety of patient cognitions predicted outcome strongly suggests that a more integrated view of adjustment, incorporating emotional, cognitive and behavioural aspects of recovery, should be taken when studying this group. If irritability and blood pressure are both important in predicting outcome (including distress), rehabilitation programs should also be continuing to emphasise the beneficial effects of relaxation and stress management training, as well as looking at ways of changing behaviour which may have influenced the development of heart disease in the first place. While spouse behaviour may not be as important in influencing psychological recovery as was hypothesised, it may still play a part in helping the physical recovery process via

encouraging patients to participate in rehabilitation through non-threatening expressed encouragement and a willingness to discuss problems and difficulties when the patient so wishes. This finding would suggest a continuum of support offered by the spouse, which in non-intrusive form at one end allows the patient the space to recover, while at the other end becomes intrusive (especially at a later stage of recovery), affecting patient self-esteem and self-efficacy as a result. Intrusiveness was shown to be associated with poorer adjustment only at later stages of recovery in the current sample. A balance needs to be struck between protecting the vulnerable patient for just long enough to allow confidence to be regained, and intruding into their private domain. Gradual withdrawing of such helpful support may allow full physical and psychological recovery to occur. Further studies of a longitudinal nature may provide supporting evidence for such a continuum. Further study may also highlight what effect patient attitudes have upon the attitudes of their spouse, and how these attitudes might influence spouse behaviour in turn. That the patients in the current sample showed generally good psychological recovery even soon after their M.I. suggests the need to keep a more informed eye on how those at different life stages deal with life-threatening illnesses. Older people may have more psychological resources to deal with such threats, and a greater expectation of ill-health in later life may help prepare individuals to cope more effectively when illness does arise. Perhaps we risk "over-psychologising" the effects of illness in those who go about dealing with it in a remarkably matter-of-fact and calm manner, as many of the participants in this sample did. Alternatively, research should be looking at how older adults cope effectively with crisis, with a view to helping those that adjust less well develop more adaptive individual and interpersonal strategies during ill-health.

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APPENDIX 1

GENERAL INFORMATION QUESTIONNAIRE

PATIENT/SPOUSE GENERAL INFORMATION QUESTIONNAIRE

1. Patient code. _____

2. Patient age. _____ yrs _____ mths

3. Sex _____

4. How long married _____ yrs _____ mths.

5. No of children _____

6. Ages of children _____

7. No of children living at home _____

8. Patient's previous marriages _____

9. Spouses previous marriages _____

10. Patient Occupation _____

11. Patient Job status _____

12. Occupation of wife _____

13. Car owner? Y N

14. Education: Left school aged 16 yrs or less _____

Left school aged 16-18yrs _____

Voluntary training beyond school _____

Higher education (HNC, HND) _____

Univsity/polytechnic degree: Comp _____ Uncomp _____

Higher degree _____

How long since MI?

Pets?

APPENDIX 2

NOTTINGHAM ADJUSTMENT SCALE

NOTTINGHAM ADJUSTMENT SCALE.

Section A. Anxiety/Depression.

**KEY: N= not at all; n= no more than usual; m= rather more than usual
M= much more than usual.**

(Recently= in the last few weeks)	N	n	m	M
1. Have you recently been feeling down and out of sorts?	4	3	2	1
2. Have you recently felt that you are ill?	4	3	2	1
3. Have you recently felt constantly under strain?	4	3	2	1
4. Have you recently found everything getting on top of you?	4	3	2	1
5. Have you recently been feeling nervous or strung up all the time?	4	3	2	1
6. Have you recently been thinking of yourself as a worthless person?	4	3	2	1
7. Have you recently felt that life is entirely hopeless?	4	3	2	1
8. Have you recently felt that life is not worth living?	4	3	2	1
9. Have you recently thought of the possibility of doing away with yourself?	4	3	2	1
10. Have you recently found at times you couldn't do anything because your nerves were so bad?	4	3	2	1
11. Have you recently found yourself wishing that you were dead and away from it all?	4	3	2	1
12. Have you recently found the idea of taking your life kept coming into mind?	4	3	2	1

Section B: Self Esteem. Client must agree/disagree with the following statements.

A= strongly agree; a= agree; *= don't know; d= disagree; D= strongly disagree

	A	a	*	d	D
1. On the whole, I am satisfied with myself.	5	4	3	2	1
2. At times I think I am no good at all.	1	2	3	4	5
3. I am able to do things as well as most other people.	5	4	3	2	1
4. I certainly feel useless at times.	1	2	3	4	5
5. I feel that I do not have much to be proud of.	1	2	3	4	5
6. I feel that I am a person of worth; at least on an equal plane with others.	5	4	3	2	1
7. I wish I could have more respect for myself.	1	2	3	4	5
8. All in all, I'm inclined to feel that I'm a failure.	1	2	3	4	5
9. I take a positive attitude towards myself.	5	4	3	2	1

Section C. Attitudes. Client must agree/disagree with the following statements.

	A	a	*	d	D
1. People with heart problems are used to failing at most things they do.	1	2	3	4	5
2. Most people with heart problems are constantly worried about what might happen to them.	1	2	3	4	5
3. Most people with heart problems keep a lot of things to themselves.	1	2	3	4	5
4. Most people with heart problems feel that they are worthless.	1	2	3	4	5

5. People with heart problems are generally more easily upset than those without heart problems.	1	2	3	4	5
6. Most people with heart problems are dissatisfied with themselves.	1	2	3	4	5
7. Most people with heart problems believe that a heart attack is the worst thing that could happen to them.	1	2	3	4	5

Section D. Locus of control. Client must agree/disagree with the following statements.

	A	a	*	d	D
1. It's what I can do to help myself that's really going to make all the difference.	5	4	3	2	1
2. It's up to me to make sure I make the best of my future in these circumstances.	5	4	3	2	1
3. My own contribution to my rehabilitation doesn't amount to much.	1	2	3	4	5
4. I have little or no control over my progress from now on.	1	2	3	4	5

Section E. Acceptance. Client must agree/ disagree with the following statements.

	A	a	*	d	D
1. Because of my heart problem, I feel miserable most of the time.	1	2	3	4	5
2. It makes me feel very bad to see all the things that those without heart problems can do which I cannot.	1	2	3	4	5
3. Because of my heart problem, I have little to offer other people.	1	2	3	4	5
4. Because of my heart problem, other peoples lives have more meaning than my own.	1	2	3	4	5

5. I feel satisfied with my abilities, and my heart problem doesn't bother me too much.	5	4	3	2	1
6. Almost every area of my life is closed to me because of my heart problem.	1	2	3	4	5
7. My heart problem prevents me from doing just about everything I really want to do and from being the kind of person I really want to be.	1	2	3	4	5
8. In just about everything, My heart problem is so annoying that I can't enjoy anything.	1	2	3	4	5
9. Often there are times when I think about my heart problem, and it upsets me so much that I am unable to think of or do anything else.	1	2	3	4	5

Section F. Self-efficacy. Client must agree/disagree with the following statements.

	A	a	*	d	D
1. I give up on things before completing them.	1	2	3	4	5
2. If something looks too complicated, I will not even bother to try.	1	2	3	4	5
3. When I decide to do something, I go right to work on it.	5	4	3	2	1
4. When I try to learn something new, I soon give up if I am not initially successful.	1	2	3	4	5
5. I avoid trying to learn new things when they look too difficult for me .	1	2	3	4	5
6. Failure just makes me try harder.	5	4	3	2	1
7. I give up easily.	1	2	3	4	5
8. I do not seem capable of dealing with most problems that come up in life.	1	2	3	4	5

Section G. Attributional style. Client must state how often the statement refer to him/herself.

A= always; B= often; C= sometimes; D= rarely; E= never.

	A	B	C	D	E
1. Any successes I have had have been due to good fortune.	1	2	3	4	5
2. When things go wrong it's because of circumstances beyond my control.	1	2	3	4	5
3. Any successes I've had have been due to outside influences.	1	2	3	4	5
4. Any successes I've had have been due to the fact that circumstances have happened to be right.	1	2	3	4	5
5. If things go well it's just good luck.	1	2	3	4	5
6. If things go well it's because the system helped me.	1	2	3	4	5

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APPENDIX 3

LEVEL OF EXPRESSED EMOTION SCALE

LEVEL OF EXPRESSED EMOTION SCALE

The following statements describe the ways in which someone may act towards you. Please indicate whether your **HUSBAND/WIFE** has acted in these ways during the past **3 months**. Please tick the box which best applies.

<u>STATEMENT</u>	untrue	more or less untrue	more or less true	true
1. Calms me down when I'm upset.				
2. Is tolerant with me, even when I'm not meeting his expectations.				
3. Is sympathetic towards me when I'm ill or upset.				
4. Can see my point of view.				
5. Is always interfering.				
6. Can't think straight when things go wrong.				
7. Will help me when I'm upset.				
8. Makes me feel valuable as a person.				
9. Knows how to handle my feelings when I'm unwell.				
10. Understands my limitations.				
11. Often checks up on me to see what I'm doing.				
12. Is able to be in control in stressful situations.				
13. Tries to make me feel better when I'm ill.				
14. Is always nosing into my business.				
15. Hears me out.				
16. Has to know everything about me.				
17. Makes me feel relaxed when he/she is about.				
18. Accuses me of exaggerating when I say I'm unwell.				
19. Will take it easy with me, even when things are not going right.				
20. Insists on knowing where I'm going.				
21. Is a considerate person when I'm ill.				
22. Butts into my private matters.				
23. Can cope well with stress.				

STATEMENT	untrue	more or less untrue	more or less true	true
24. Is willing to gain more information to understand my condition, when I'm not feeling well.				
25. Is understanding if I make a mistake.				
26. Doesn't pry into my life.				
27. Makes matters worse when things aren't going well.				
28. Often accuses me of making things up when I'm not feeling well.				
29. Flies off the handle when I don't do something well.				
30. Gets upset when I don't check in with him/her.				
31. Gets irritated when things don't go right.				
32. Tries to reassure me when I'm not feeling well.				
33. Expects the same level of effort from me even if I don't feel well.				
34. Is critical of me.				
35. Tries to change me.				
36. Gets annoyed when I want something from him/her.				
37. Usually agrees with me.				
38. Shows me he/she loves me.				

(From Gerlsma et al. 1992)

APPENDIX 4

SUPPORTIVE BEHAVIOURS CHECKLIST

SUPPORTIVE BEHAVIOURS CHECKLIST

This measure asks about the different ways in which the respondent might have been helped by other people in the past month.

Ask each question in turn, and record the answer. For each question that is answered YES, ask respondent who it is who has been helpful. Record on your pad of blank sheets that person's initials, first name or nickname. Do not record anyone's name more than once. If more than ten names are elicited, only record the first ten.

This section is concerned with the ways in which people have helped you in the last month. I will ask you a number of questions about different things people may have done. If someone has helped in one of the ways described below, I will record their initials or first name or nickname on this blank sheet of paper. We only need this so that I can ask you some questions later about each person you mention. Once I've finished asking you these questions I will give you the sheet of paper with the names on to destroy.

A) In the past month then, is there someone who has:

		SOMEONE	NO-ONE	NOT NEEDED OR DON'T KNOW
1	GIVEN YOU A HAND WITH SOMETHING THAT NEEDED DOING?			
2	GIVEN YOU SOME INFORMATION OR ADVICE ABOUT A DAY-TO-DAY PROBLEM?			
3	LET YOU KNOW THAT YOU DID SOMETHING WELL?			
4	JOKED WITH YOU TO TRY TO CHEER YOU UP?			
5	GIVEN OR LENT YOU MONEY WHEN YOU NEEDED IT?			
6	LET YOU KNOW THAT HE OR SHE IS ALWAYS AROUND IF YOU NEED HELP WITH SOMETHING?			
7	HELPED BY GIVING YOU A LIFT SOMEWHERE?			
8	HELPED YOU TO TAKE YOUR MIND OFF THINGS BY DOING SOMETHING TOGETHER?			
9	LET YOU TALK ABOUT PERSONAL WORRIES AND DIFFICULTIES?			
10	LENT OR GIVEN YOU SOMETHING YOU NEED (OTHER THAN MONEY) ?			
11	TOLD YOU WHAT HE OR SHE FELT OR DID IN A SITUATION SIMILAR TO YOURS?			
12	TALKED WITH YOU ABOUT SOME INTERESTS THAT YOU HAVE IN COMMON?			
13	HELPED BY LOOKING AFTER YOUR CHILDREN?			

(From Jackson 1988)

APPENDIX 5

G.P. ADDITIONAL INFORMATION QUESTIONNAIRE

Mr David Craig
Dept. of Psychology
Block A, Clerkseat Building
Royal Cornhill Hospital
Westburn Road
Aberdeen

Dear Dr

Re: _____

Some weeks ago I wrote to you concerning the above patient, requesting additional information on his/her recovery from myocardial infarction. At that time _____ agreed to take part in a research project being carried out by myself with the supervision of Dr's Walton, Jennings and Metcalf of Aberdeen Royal Infirmary, and also Dr George Deans, Clinical Psychologist, Dept of General Practice, University of Aberdeen.

Since that time _____ has been interviewed on two occasions by myself, and I will not need to collect any further data from him/her.

However, could you please provide me with the following two pieces of information to complete the data set for your patient. I would be most grateful.

1 (a). Could you give an estimate of how well he/she has recovered physically, based on your knowledge of his/her adherence to any rehabilitation advice given and/or your assessment of the patient if/when you last saw them. Please Circle:

-----	-----	-----	-----	
Poor Recovery	Slight Recovery	Moderate Recovery	Very Good Recovery	Extremely Good Recovery

(b). Please state briefly what source(s) of information you are using to make this assessment _____

2. How often has the above patient come to see you or your colleagues in the practice between the following dates:

_____ and _____: No of times: _____

Please return this form in the envelope provided. Thank you for your help.

APPENDIX 6

PATIENT CONSENT FORM

PATIENT INFORMATION

I am doing a project to look at aspects of a person's home life and how these might affect their recovery from a heart attack. This is an area which researchers know very little about. This project hopes to discover how patients and their relatives might be helped in the future to recover and return to a normal life more quickly after going home from hospital.

I WONDER IF YOU WOULD LIKE TO TAKE PART?

The project would involve me coming into your home soon after your return from hospital, and once again about 3 months later. This would be at a time agreed to by yourself, usually in the evening. You would be asked to answer some simple questions and complete some questionnaires. These will ask for information about your age, job status, and other general information. Other questions will relate to how you feel you have recovered from your heart attack, and the support you receive from family and friends. Your spouse will also be asked to complete a questionnaire.

Your GP and Consultant will be asked to give information on your health while in hospital, and also when you are interviewed for a second time.

ALL INFORMATION PROVIDED WILL BE TREATED IN THE STRICTEST CONFIDENCE. ALL INFORMATION GIVEN WILL BE ANALYSED TOGETHER WITH THAT FROM OTHER PARTICIPANTS, ENSURING THAT YOU CANNOT BE IDENTIFIED AS A RESULT OF TAKING PART.

The interviews will take about one hour, and can be arranged by telephone or letter after receiving your consent on the reverse of this information sheet.

AFTER GIVING YOUR CONSENT, YOU ARE COMPLETELY FREE TO WITHDRAW FROM THE PROJECT AT ANY TIME. YOUR WITHDRAWAL WILL NOT AFFECT YOUR CONTINUING MEDICAL TREATMENT IN ANY WAY.

I would be most grateful if you could participate in this project. If you wish to take part, please turn over the page, and sign where indicated.

Thank you very much

Mr. David Craig.

I have read the patient information sheet and have had the opportunity to discuss the details with Mr. David Craig, the Principal Investigator, and to ask questions. I understand fully what is proposed.

I understand that this project is designed to promote medical and health knowledge, which has been approved by the Joint Ethical Committee, and may be of no benefit to me personally.

I hereby fully and freely consent to participate in the study which has been fully explained to me.

Signature of patient _____

Date _____

I confirm that I have explained to the patient named above, the nature and purpose of the study.

Signature of Investigator _____

Date _____

Patient information label and telephone number:

MI severity (CPK): _____

Medication: _____

Blood Pressure: _____

APPENDIX 7

1ST G.P. INFORMATION LETTER

Mr David Craig
Dept of Psychology
Block A, Clekseat Building
Royal Cornhill Hospital
Westburn Road
Aberdeen

Dear Dr

Re: _____

I am currently undertaking research looking at family and social factors in the psychological and physical rehabilitation following myocardial infarction. This research has been approved by the Joint Ethical Committee of Grampian Health Board and The University of Aberdeen, with supervision from Dr's Walton, Jennings and Metcalf of Aberdeen Royal Infirmary, and Dr. George Deans, Clinical Psychologist, Dept. of General Practice, University of Aberdeen. In the first instance, the project involves recruiting patients who have had an uncomplicated, first event myocardial infarction, while they are on the wards of Aberdeen Royal Infirmary. Your patient named above has given their informed consent to participation in the study.

Recruited patients will be interviewed in their own homes after their return home from hospital, and then once again approximately three months later, by the principal investigator. Interviews will last approximately one hour, and will involve the collection of demographic information and the administration of standardised questionnaires on psychological adjustment, social support and levels of expressed emotion. Spouses will also be asked to complete the questionnaire on expressed emotion.

I would be most grateful if I could write to you again at the time of the second interview for the following information.

A rating of how well you feel the patient has recovered physically

The number of attendance's at your own clinic

Thank you very much for your help.

Yours faithfully

David Craig, Trainee Clinical Psychologist.

APPENDIX 8

**DESCRIPTION OF CLINICAL SAMPLES USED BY
QUESTIONNAIRE AUTHORS**

A sample of 469 visually impaired clients attending a vocational rehabilitation centre represented the normative sample for the Nottingham Adjustment Scale (Dodds et al. 1994). The clinical sample used for the Level of Expressed Emotion Scale (Gerlsma 1992) consisted of 26 depressed outpatients and their partners (13 male and 13 female patients) with a mean age of 42 years (S.D. 13). Couples had been together for an average of 9 years (S.D. 4.3).